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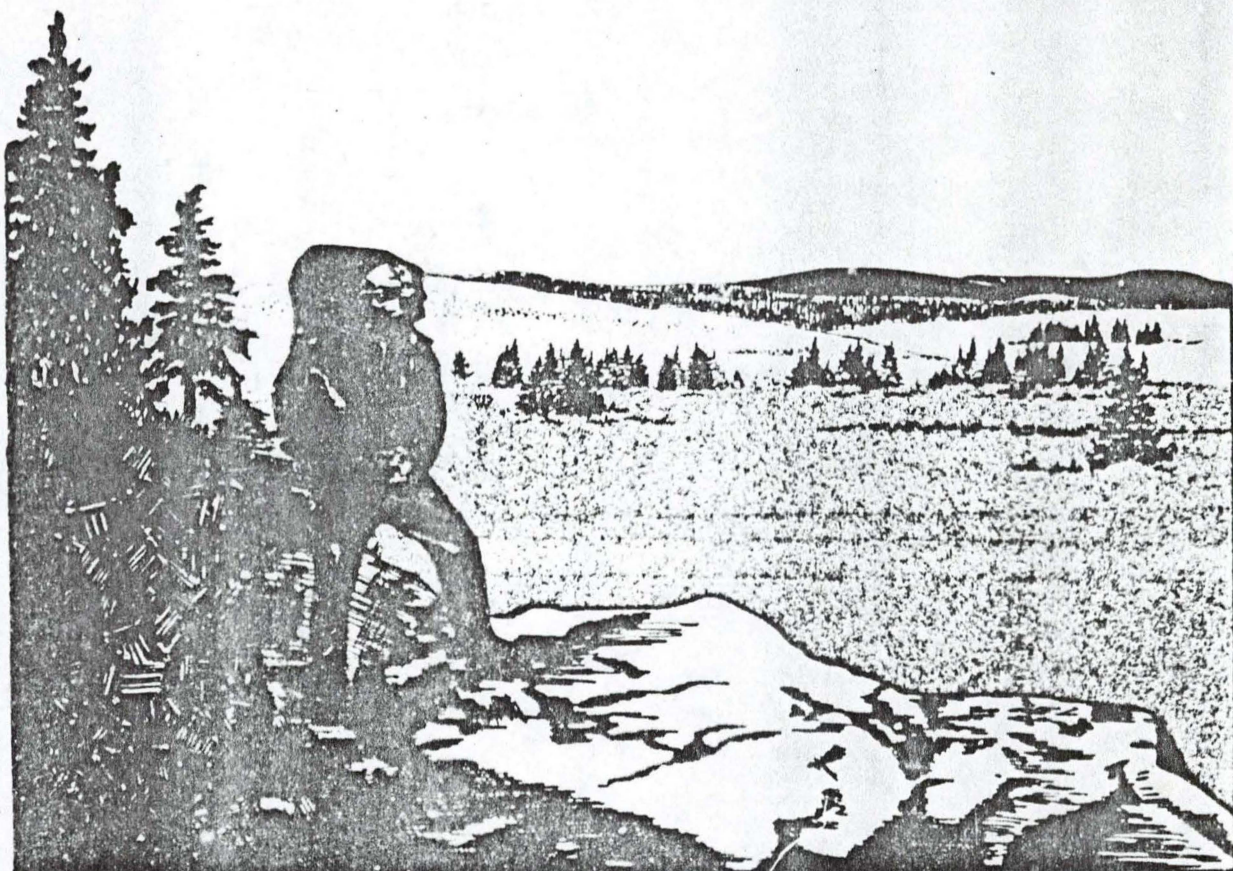
Forest Service

Pacific  
Northwest  
Region



# ASSESSMENT of the SOUTHERN OREGON INTERTIE TRAIL

SPJUT



An Assessment of the Proposed Trail Route connecting the Pacific Crest  
National Scenic Trail to the Desert National Scenic Trail in Southern Oregon

by

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An assessment submitted in partial  
fulfillment of the requirements of Outdoor  
Recreation Management Short Course

Forest Service  
USDA

and

Department of Parks, Recreation and Tourism Management  
College of Forest and Recreation Resources  
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## ABSTRACT

This assessment identifies and evaluates routes and management strategies for a proposed trail linking the Pacific Crest National Scenic Trail to Desert National Scenic Trail. It considers a range of trail management philosophies from a minimally developed trail, requiring a high degree of self-reliance through the application of outdoor skills by the user, to a highly developed trail where opportunities for mental challenge are provided through information and interpretation. The assessment concludes by selecting a preferred management strategy and route for the trail and recommending a course of action.

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## I. INTRODUCTION

### A. Need for Proposed Action

Within the next 50 years, trail related recreation use across the nation is expected to increase by 270 percent. (Hof 1983). Currently there are 97,000 miles of trails on National Forest lands with an additional 20,000 miles planned for development by the year 2020. (Jamison 1979). Recognizing an ever-increasing outdoor recreation demand for public trails, Congress passed, in 1968, the National Trails System Act. (Public Law 90-543)

Within the State of Oregon the demand for trail related recreation is expected to increase nearly 70 percent above current use by year 2030 (PNRBC 1978). In order to anticipate an increase in recreational use of trails the State established, through enabling legislation, the Oregon Recreation Trails System (ORS 390.950). This system provides for a network of statewide recreation trails (Figure 1). Included within this network is a proposed trail linking the Pacific Crest National Scenic Trail to the Desert National Scenic Trail, located in the south central portion of the State. The trail, referred to as the Southern Oregon Intertile Trail has been recommended for hiking and equestrian use.

An analysis of alternative routes; trail management strategies; short and long-term environmental effects, which include physical, biological, economic, and social factors, need to be considered prior to initiating trail planning, development, and management. Therefore, the objectives of this assessment are:

1. To consider a range of alternatives for the management of the trail.



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2. To identify and analyze alternative routes.
3. To analyze the effects alternative routes and management strategies will have on the environment.
4. To select the preferred route and management of the trail.
5. Recommend a course of action for the implementation of the preferred alternatives.

B. The Proposal for a Southern Route Linking the Pacific Crest National Scenic Trail to the Desert National Scenic Trail.

The State Trails System Act established a Recreation Trails Advisory Council with an administrative position to coordinate and develop the State Trails System. After consultation with Federal, State, and local governmental agencies, and public and private organizations, the Advisory Council, with the assistance of the Oregon State Parks and Recreation, published and distributed a plan identifying routes, as shown in figure 1. (Oregon SCORP 1980)

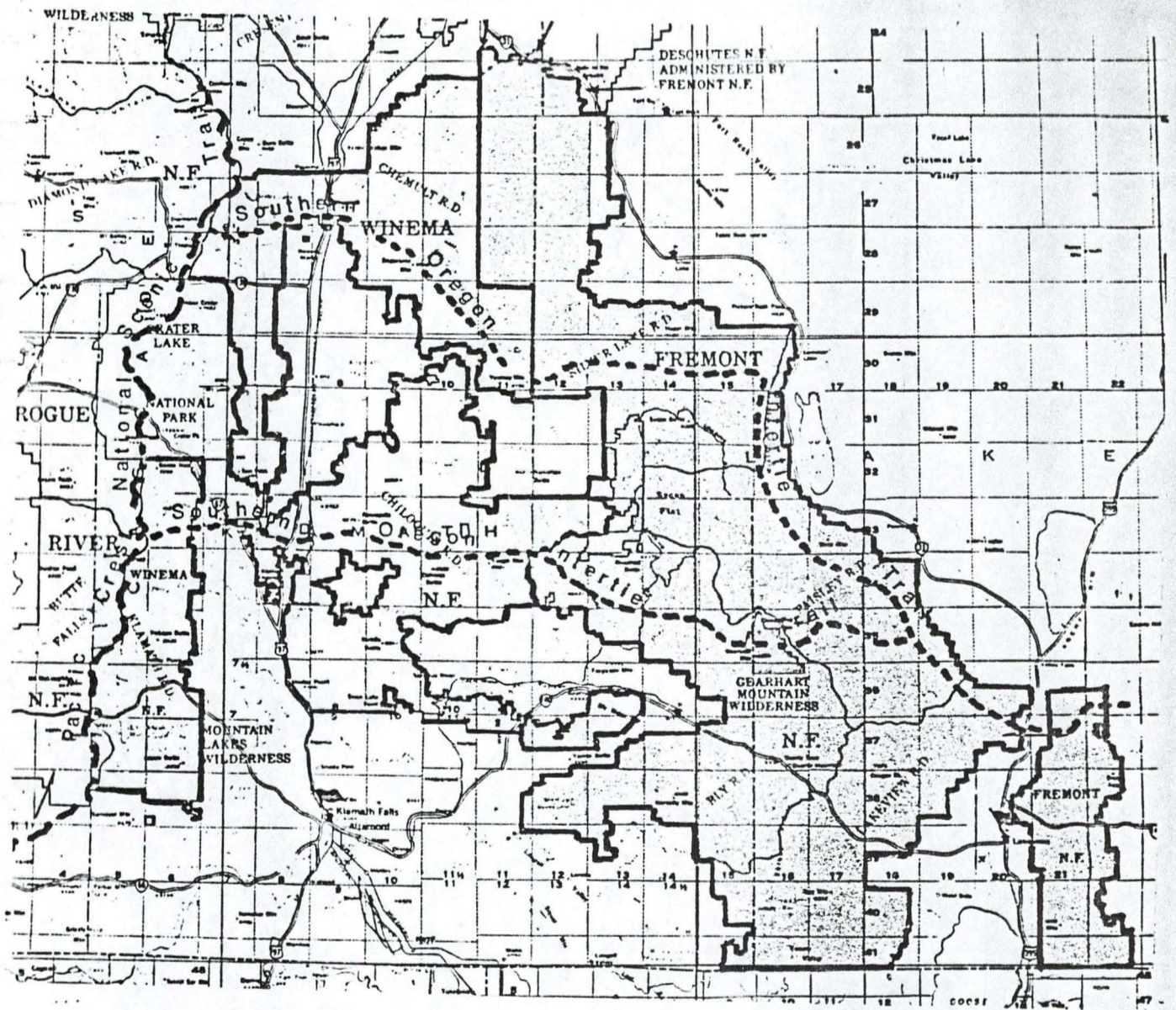
Initially, two general routes were identified for traversing the Fremont National Forest (Figure 2); one route was to cross to the north, and the other to the south. The southern route was dropped from further consideration due to extensive private land ownership, lack of recreation opportunities and significant conflicts with other resource uses (Betts 1976).

C. General Route Location

The proposed route, published in the State Trails System Plan, begins at the Pacific Crest Trail then traverses eastward over the Winema and Fremont National Forests; U.S. Fish and Wildlife Service, Hart Mountain Refuge; and Lakeview and Burns Districts of the Bureau of Land Management. The route terminates at its intersection with



# Figure 2



## Southern Oregon

## Intertie Trail

Proposed Northern and Southern  
Routes Across the Winema  
and Fremont National Forests



the Desert Trail in the Pueblo Mountains near Fields, Oregon. A trail of such a length will traverse a wide variety of landscapes. From the high forested slopes of the Cascade Range to the desert plateaus of southern Oregon, the trail user will encounter a great diversity of ecotypes. Natural diversity combined with the diversity in land ownership leads to a unique and challenging management situation.

D. Lead Agency

The U.S. D.A. Forest Service, Region Six, is assigned overall responsibility for; (1) the preparation of the assessment, and (2) the preparation of the comprehensive management plan. Other agencies provided support to the process.

Interdisciplinary Team

An Interagency Interdisciplinary team was established to prepare the assessment for the proposed trail. Members of the team which included representatives from the Forest Service, Bureau of Land Management, and Fish and Wildlife Service, are:

Team Leader:	Roger Spjut, Landscape Architect,	USDA Forest Service Fremont N.F.
Team Members:	Marv Kaschke, Refuge Manager,	US Fish and Wildlife Service, Hart Mountain Refuge.
	Rick Nelson, Transportation, Planner	USDA Forest Service Fremont N.F.
	Cleon Puetz, Timber Planner,	USDA Forest Service Fremont N.F.
	Gayle Sarff, Recreation Planner,	USDA Forest Service Winema N.F.
	Doug Troutman, Outdoor Recreation, Planner	USDA Bureau of Land Management

E. Relationship between the Assessment, the Comprehensive Management Plan and the Land Management Plans of Each Agency.



As previously stated, this assessment will evaluate a range of alternative routes and trail management strategies, and assess their relative impacts on the environment. The preferred alternative, as determined in the assessment, will identify a route and overall management strategy for the trail. Finally, it will be used as the analysis document by the various agencies for the planning of the trail in their local land management plan. These local land management plans are referred to as:

Forest Service: Forest Land and Resource Management Plans

Bureau of Land Management: Management Framework Plans

U.S. Fish and Wildlife: Environmental Assessment Report

Each local plan will also include decisions for management of those portions of the trail on lands other than Federal, for which the particular agency is responsible.

The Comprehensive Management Plan, on the other hand, will provide the direction necessary to implement the preferred alternative in this assessment. It will guide those agencies that share responsibility for development, management, and use.

#### F. Description of the Trail Environment

Key environmental and land use factors associated with the proposed trail include climate, physiography, water, minerals, land ownership, vegetation, wildlife, range, timber, recreation, and cultural resources.

##### 1. Climate

The weather is generally warm and dry in the summer and cold and dry in the winter. Average annual precipitation varies from 40

inches in the Cascade Range along the western end of the route to ten inches in the Catlow Valley on the eastern end. Overall, the proposed trail is located in a semiarid climate with an average annual precipitation of 15 inches a year (Johnson, 1982).

## 2. Physiography and Visual Quality

- a. Physiography: The proposed trail traverses three physiographic provinces; Recent (High) Cascades, Harney Basin, and Basin and Range (Figure 3 ). These physiographic provinces reflect broad differences in topography. For example, the Recent Cascades consists of a volcanic plateau capped by shield volcanoes, cinder cones, and recent lava flows. To the east, the Harney Basin province is composed of uniform expanses of lava flows with moderate relief created by cinder cones and lava buttes. Finally, the Basin and Range province, where nearly 80 percent of the route is located, is characterized by fault-block mountains that enclose internally drained basins. The lowest elevation reached along the route is 4,100 feet and the highest 8,600 feet.
- b. Visual Quality: Aesthetic criteria has been developed for each physiographic province (Pollock and others 1981). This criteria was used to evaluate and classify landscape scenic quality associated with the trail in terms of:  
  
(See Appendix One)
  1. Distinctive (Class A). Landscapes where features of land form, vegetative patterns, water forms

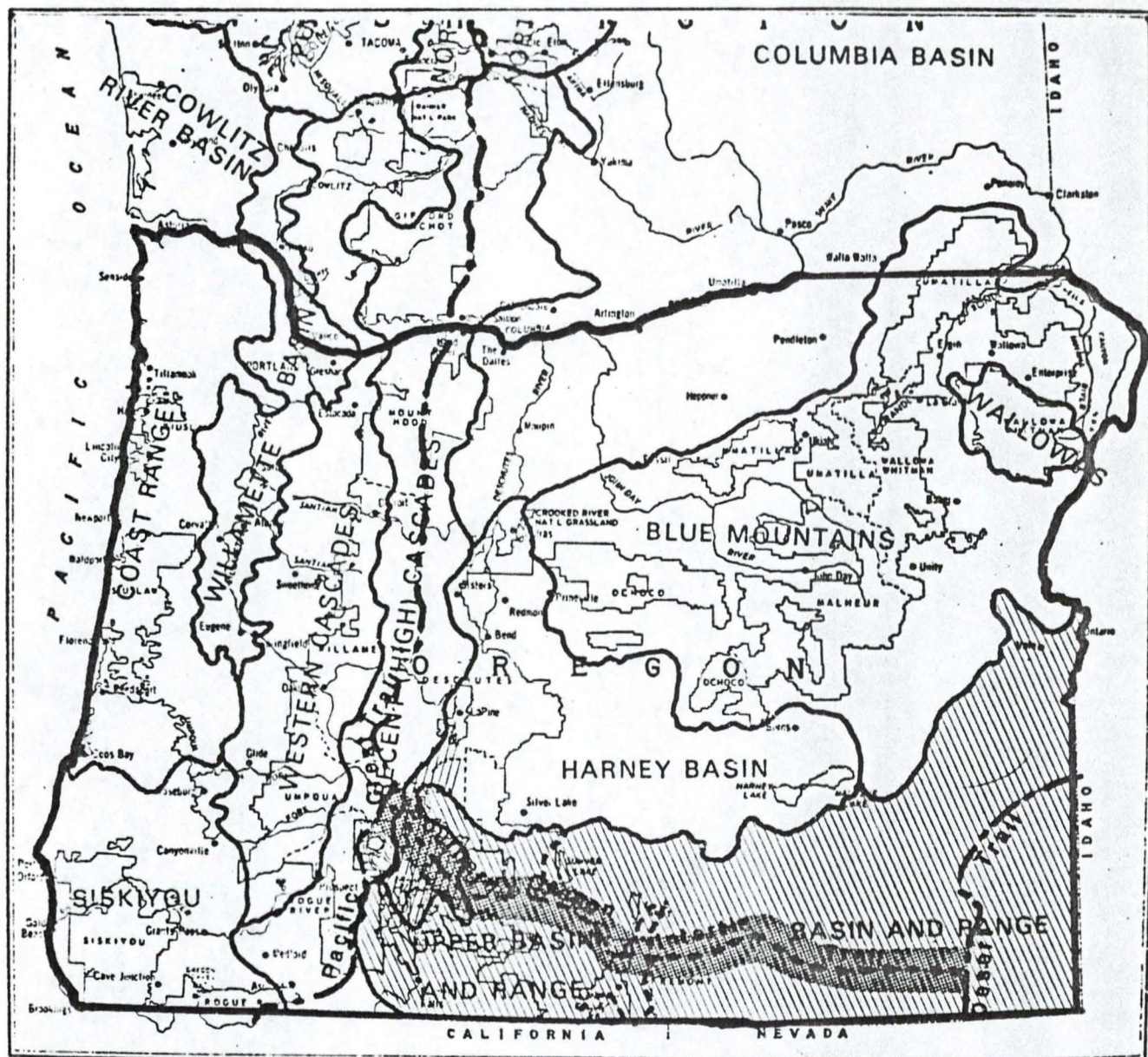


and geologic features are of unusual or outstanding visual quality.

2. Common (Class B). Landscapes containing features that are typical in scale and form throughout the physiographic province and are not outstanding in visual quality.
3. Minimal (Class C) Landscapes containing features of little to no variation or diversity in scale and form and are neither outstanding nor common in visual quality.



**Figure 3**



## Physiographic Provinces of Oregon

Dark shaded line shows the location of the route in relation to the physiographic provinces in south central Oregon



### 3. Water

Surface water is relatively scarce along certain segments of the route, primarily the eastern one third. Overall, surface water is limited to springs, shallow lakes, and reservoirs, marshes, ephemeral and perennial creeks and several small rivers. Potable water, periodically tested to meet State and Federal water quality health standards, is generally available at developed recreation sites.

### 4. Minerals and Energy Resources

Mineral resources include metallic (gold, silver, copper, etc.) and nonmetallic (pumice, crushed aggregate, etc.) while energy resources include geothermal, gas, and oil. There have been reported minor discoveries of gold, silver, zinc, and copper in the proximity of the route, but to date there is no commercial production of these minerals. Presently there are no active metallic claims on or contiguous to the proposed route (Querín 1982).

Nonmetallic mineral materials suitable for road surfacing are scattered in isolated areas along the entire route. These materials are used by both the public agencies and by private users who purchase the materials under permit. These materials consist primarily of volcanic cinders and crushable basalts and andesites, located in developed and undeveloped pits.

There has been considerable activity regarding leases of potential energy-related resources, but none of this leasing activity has yet generated energy production. Lease applications for geothermal, gas and oil resources have been

numerous. However, most of these applications have now been withdrawn. The present interest in energy resource development appears to be primarily speculative.

### 5. Land Ownership

Approximately 90 percent of the proposed route is located on Federal lands which include National Forests, Public Domain and a National Wildlife Refuge. These lands are primarily managed for "multiple resources and uses" under various laws and regulations. These areas have a significant role in meeting the nation's needs for livestock forage, wildlife habitat, water, minerals, outdoor recreation, and wood products. This becomes significant for the future of the trail because:

- a. The trail crosses a mosaic of areas where a wide range of primary management emphasis includes dispersed recreation, key wildlife habitats, range forage, developed recreation, and intensive timber management.
- b. The local land management plans will determine both the scope and quality of the recreation opportunities to be provided now and for future generations.
- c. The management strategy selected by this assessment will determine the extent to which other resource uses and activities need to be modified to provide a range of recreation opportunities associated with the trail.



Private and other (state and county) lands account for nearly 10 percent of the total trail mileage. They are devoted to a wide range of purposes such as intensive timber management, minerals production, agriculture, domestic grazing, small farms, industrial and rural homesites, power transmission, and transportation (highways and railroads). These lands are less important in providing recreation opportunities along the trail. However, they do possess cultural and historic value for the trail user interested in the growth and development of south central Oregon.

#### 6. Vegetation

A variety of environmental conditions exist along the route resulting in the development of 31 forested and 11 nonforested vegetation community types. The western two thirds is generally forested while the eastern third is nonforested. Approximately eight rare, threatened, and endangered plant species are known to occur in the vicinity of the route (Riker et al., 1980)

#### 7. Timber

Timber resource management is extensively practiced on the National Forest lands where approximately 70 percent of the route is located. Silvicultural practices are designed to meet a wide range of land allocations and resource management objectives. Harvesting, therefore, may vary in intensity ranging from sanitation salvage where often only single trees are harvested to clearcut where entire stands up to 40 acres are removed (on private timbered lands harvesting practices may allow for considerably larger clearcut of up to several hundred acres or more).

The harvesting of timber often requires an extensive transportation network to access the stands for their removal and transport to the mill. Consequently, portions of the route are heavily dissected by logging roads where up to several roads may be traversed in one mile of trail.

#### 8. Wildlife

Diversified habitat conditions associated with the trail provide for many species of wildlife to occur. These are categorized into six general groups: big game, small game, waterfowl, furbearers, fish, and nongame.

Black-tailed deer, mule deer, Roosevelt elk, Rocky Mountain elk, black bear, antelope, bighorn sheep, and cougar are big game animals. Mule deer, the most numerous big game species, are found along the entire route.

Game birds include ruffed and blue grouse, chukars, sage grouse, mountain quail, California quail and morning doves. Small game animals include silver grey squirrels and snowshoe hare-cottontail. Fourteen species of furbearers are known to exist. Muskrat, mink, beaver, and coyote are the primary species.

Trout exist in all perennial streams and lakes which can support them. Rainbow Redband and cutthroat are native species. Other species include Dolly Varden, eastern brooktrout, and kokanee. Largemouth bass, yellow perch, crappie, and other warm water species may be found in the lakes, reservoirs, and streams at lower elevations.



Nongame wildlife includes a large array of mammals, birds, reptiles, amphibians, and fishes. The route traverses areas used by large populations of migratory waterfowl.

The bald eagle, a Federally classified threatened specie, is known to occur in isolated areas along the route. The peregrine falcon migrates across the route and is Federally classified as Endangered.

The white pelican and northern spotted owl are on an Oregon Department of Fish and Wildlife list of endangered or threatened wildlife. Wolverines and spotted frogs which may exist along the route, are also on the state list.

#### 9. Commercial Livestock Grazing

A long history of livestock use by both sheep and cattle has occurred along the entire route. Many local ranchers depend upon Federal range land for sustaining their livestock operation.

Federal lands along the route are divided into grazing allotments. These allotments are generally fenced to prevent livestock drift, both onto or off the permitted area. In addition, there are fences to control livestock within the allotment so a grazing system can be operated. The route traverses over 60 allotments requiring considerable fence crossings.

Livestock use ranges from as early as February to as late as October. However, the bulk of the grazing occurs from June 1 to September 30 each year.



## 10. Recreation

The route traverses a wide range of recreation opportunities ranging from semi-primitive to intensively developed rural settings. The Recreation Opportunity Spectrum (ROS) was used to identify and assess these recreation opportunities (USDA Forest Service 1980). As shown in table 1, ROS provides the framework to identify and clarify the relationships between recreational settings, activities, and experiences by categorizing these relationships into classes and arranging them on a continuum or spectrum. There are no primitive or rural ROS settings within the vicinity of the proposed trail.

**Table 1:** Recreation Opportunity Spectrum classes associated with the Southern Oregon Intertile Trail (after Bacon 1982).

<b>SPNM</b> Semi-Primitive Non-Motorized	<b>SPM</b> Semi-Primitive Motorized	<b>RM</b> Roaded Modified	<b>RN</b> Roaded Natural	<b>R</b> Rural
<ul style="list-style-type: none"> <li>• High probability of experiencing solitude, closeness to nature, tranquility, self reliance, challenge and risk.</li> <li>• Natural appearing environment</li> <li>• Low interaction between users</li> <li>• Some evidence of other users</li> <li>• Minimum of subtle on site controls</li> <li>• Access and travel is non-motorized on trails, some primitive roads or cross country</li> <li>• Vegetative clearings consist of very small units in size and number, widely dispersed and not obvious</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate opportunity for solitude, tranquility, and closeness to nature. High degree of self reliance, challenge, and risk in using motorized equipment.</li> <li>• Predominantly natural appearing environment</li> <li>• Low concentration of users but often evidence of other users on trails</li> <li>• Minimum on site controls and restrictions present but subtle</li> <li>• Vegetative clearings very small in size and number, widely dispersed and not obvious</li> </ul>	<ul style="list-style-type: none"> <li>• Opportunity to get away from others but with easy access. Some self reliance in building and use of motorized equipment. Feeling of independence and freedom. Little challenge and risk.</li> <li>• Substantially modified natural environment except for composite roads, trails, etc. and some areas may be strongly dominated from within yet remain subordinate to the surrounding roads and highways.</li> <li>• Inadvertent evidence of other users on roads. Little evidence of others or interaction at camp sites.</li> <li>• Little on site controls of users except for some gated roads.</li> <li>• Conventional motorized access including sedan and trailers, RVs, ORVs and motor bikes.</li> <li>• Shape and blend vegetative clearings. Minimal campsites and immediate surroundings to site in natural appearing area.</li> </ul>	<ul style="list-style-type: none"> <li>• Opportunity to affiliate with other users in developed sites but with some chance for privacy. Self reliance on outdoor skills of little importance. Little challenge and risk, except for activities such as downhill skiing.</li> <li>• Mostly natural appearing environment on wooded but sensitive roads and trails.</li> <li>• Interaction between users at camp sites is of moderate importance.</li> <li>• Some obvious on site control of users.</li> <li>• Access and travel is conventional motorized including sedan and trailers, RVs and some motor homes.</li> <li>• Vegetative clearings done to maintain desired visual and recreation characteristics.</li> </ul>	<ul style="list-style-type: none"> <li>• Opportunity to observe and affiliate with other users is important as is convenience of facilities. Self reliance on outdoor skills of little importance. Little challenge and risk, except for activities such as downhill skiing.</li> <li>• Natural environment is culturally modified yet attractive (i.e. pastoral farmlands). Scenery may range from clearings not obvious to dominant.</li> <li>• Interaction between users may be high as is evidence of other users.</li> <li>• Obvious and prevalent on site controls</li> <li>• Access and travel facilities are for individual intensive motorized use.</li> </ul>



Existing and projected recreation use data for trails within Klamath, Lake, and Harney Counties is based upon the Regional Data Program, Pacific Northwest River Basin Commission (1980) and the Fremont and Winema National Forests Recreation Information Management system (RIM 1980). Table 2 shows the current trail use on National Forest lands. There is no trail use data available for Bureau of Land Management, State, County or private lands within the three county area.

Table 2: Current trail use and miles of trail for Fremont and Winema National Forests for year 1984.

Forest	RVDs	MI
Winema NF		
Hiking	10.6	143
Horseback	4.2	
Fremont NF		
Hiking	3.2	55.1
Horseback	1.2	
Total	19.7	198.1

Source: Fremont and Winema NFs RIM 1984,

\* RVDs measured in thousands

Current recreation use for walking, hiking, and horseback riding for the three counties is estimated at 12,176,100 activity occasions <sup>1/</sup> (PNRBC 1980). Using the recreation activity duration <sup>2/</sup> factors for computing activity occasions on National Forest lands and waters to recreation visitor days <sup>3/</sup> (USDA Forest Service 1980), 12,176,100 activity occasions are equivalent to 714,081 recreation visitor days.

1/ Activity Occasion (AO) A single experience in a single recreation activity by one visitor during a 24 hour day. A visitor may aggregate several activity occasions in one day. When properly calculated, activity occasions are an approximation of the number of people who participate in a given activity over time (USDA Forest Service 1980).

2/ Activity Duration The length of time (in hours and tenths of hours) that an average visitor may spend participating in a single recreation activity during a 24 hour day. (USDA Forest Service 1980)

3/ Recreation Visitor Day RVD One RVD is equivalent to one person recreating in one activity for 12 hours or 12 people recreating in one activity for one hour. (USDA Forest Service 1980).



Projected recreation use for walking, hiking, and horseback riding is anticipated to reach 1,268,332 RVDs by year 2030 for the three counties (PNRBC 1980). On National Forest lands projected recreation use for trails is expected to reach 38,050 RVDs by year 2030. This amounts to a 54 percent increase from year 1980 to year 2030. The projected trail use for National Forest lands was derived by taking 3 percent of the total projected use for the 3 counties. Table 3 shows projected recreation use for trails on National Forest lands.

Table 3: Projected Trail Use for Fremont and Winema National Forests for year 2030 measured in thousands of RVDs.

Forest	RVDs
Winema NF	
Hiking	20.6
Horseback	8.3
<hr/>	
Fremont NF	
Hiking	6.7
Horseback	2.4
<hr/>	
Total	38.0

## 11. Cultural Resources

Cultural resources are the remains of sites, structures, and objects used by man in the past. They may be historic, prehistoric, archaeological, or architectural in nature. These resources may be found along the route.

Archaeological evidence indicates that much of south central Oregon was populated by aboriginal cultures, beginning about 13,000 years ago. More recently, the route traverses an area used by at least three known North American Indian groups; Klamath, Modoc, and Northern Paiute tribes (Thompson 1979).

The history of recorded human activity associated with the route involves many of the elements common to the frontiers of the American West in the

nineteenth and early twentieth centuries. The fur trade, Government-supported exploration, Indian-white relations, mining, cattle raising, natural history studies, overland emigration, settlement, land speculation, and townsite development were all among the activities of the historic period. So, too, transportation, lumbering, farming and other enterprises added to the economic base holding a population in south central Oregon (Minor 1979).

In summary, the route traverses an area rich in cultural resources. These resources provide an opportunity to enhance the recreational experience of the trail user through information and interpretation.



## II. ISSUES and CONCERNS

### A. The Scoping process

Issues and concerns were initially determined through a scoping process that involved the Advisory Council, and the managing agencies. These issues and concerns were further refined by the previously listed interagency disciplinary team.

### B. Issues and Concerns

#### 1. To what level should the trail be developed?

The resolution of this concern will determine the character of the recreational experience associated with various segments of the trail and the impacts of the trail on resource management uses and activities of public as well as private land.

#### 2. How Much Private Land Is Needed to Protect the Trail Environment?

Resolution of this issue will be determined by general trail characteristics on private land and the management emphasis for these lands. These factors will determine the extent of land acquisition necessary.

#### 3. Trail Use and Conflicting Uses

The major aspect of this concern pertains to how managing agencies will determine appropriate types and levels of use for the trail as it traverses a range of recreation settings. It also determines how agencies will monitor and evaluate use and its impacts on other resources (e.g., sensitive plants, wildlife, cultural resources, etc.).

4. Water

There are long segments of the trail route where surface water is scarce or nonexistent. Resolution of this concern will determine to what extent agencies will develop additional water services.

5. Benefit/Cost

The resolution of this concern will determine the level of trail development that provides the best benefit cost/ratio.



### III EVALUATION CRITERIA

The evaluation criteria were developed by the interdisciplinary team based upon the issues and concerns identified during the scoping process. These criteria provide the basis for formulating and evaluating alternatives for the proposed trail. To facilitate the evaluation of the alternatives each criterion was numerically weighted by the team using a scale ranging from 1 to 10 based upon its relative importance. The most important or essential criterion was given a weight of ten and the lowest, a weight of five.

Therefore, each alternative will be evaluated according to which it:

- |  | <u>Weight</u> |
|--|---------------|
| 1. <u>Minimizes or reduces conflicts with other resource management and land uses on Federal and State lands, i.e., timber production, mineral resource development.</u> (Responds to concerns 1 and 3)  | 5             |
| <br>Rationale for Weight   |               |
| The Multiple Use Sustained Yield Act of the 1964 (Public Law 74-215) states that full consideration be given to the various other resources and not necessarily those uses that give the greatest dollar return or the greatest unit output. Therefore it is not essential that the trail be located merely to minimize impacts to commodity resource uses and needs. Nevertheless, consideration will be given to alleviate resource conflicts to the extent practical. |               |
| 2. <u>Minimizes or reduces conflicts with private land use and development</u> (Responds to Issue No. 2).  | 9             |

#### Rationale for Weight

The National Trails System Act, as amended in 1978 states that connecting or side trails, marked as components of a national recreation or national scenic trail, may be located across lands administered by interstate, state or local governmental agencies providing no Federal land acquisition is involved. Therefore, the trail will be routed to minimize the impacts on private landowners and may be routed along existing public right-of-ways.

3. Meets the needs of the equestrian and hiker for information/education, and interpretation.

(Responds to concern 1 and 3).

7

#### Rationale for Weight

Providing information/education, and the interpretation opportunities for the trail user are desirable but not essential to trail development.

4. Meets the needs of the equestrian and hiker for the basics of safety, proximity to surface water sources, and access. (Responds to concern No. 4).

Weight

10

#### Rationale for Weight

The Oregon State Trails System has identified the route for equestrian and hiking use. Proximity to potable water, trail access, are essential to the trail user.



5. Provides for range of trail experiences, consistent with land management objectives within the constraints of location, topography, funding, and other restrictions.

(Responds to concern 3)

8

Rationale for Weight

Providing a range of recreation opportunity settings is highly desirable but not essential in the planning and development of the trail.

6. Minimizes or reduces conflicts with sensitive and/or threatened plant and animal communities/habitats.

10

(Responds to concern 3)

Rationale for Weight

The Endangered Species Act, as amended in 1982 (Public Law 93-205) states that endangered threatened, and sensitive plant and animal species including their habitat must be protected. Therefore, it is essential that such species are protected during the planning and development of the trail.

7. Minimizes or reduces conflicts with significant archaeological or historical sites which could be impacted by construction or use. (Responds to concern No. 3).

Weight

10

Rationale for Weight

Four Federal laws provide for the protection of cultural resources: the Antiquities Act of 1906, the National Historic Preservation Act of 1966, National Environmental

Policy Act of 1969, and the Archaeological and Historical Conservation Act of 1974. Therefore it is essential that cultural resources be protected during the planning and development of the Trail.

8. Optimizes benefits/costs in terms of recreation use, trail development, operation and maintenance. (Responds to concern No. 5)

6

#### Rationale for Weight

For the past several years funding for trail planning and development has been limited. Much of the work accomplished for trail is the result of volunteer help. Therefore it is desirable that the trail be developed in the most cost effective manner.

The preferred alternative identified in this assessment will be the one judged to provide the best balance toward satisfying all the criteria.



#### IV ALTERNATIVES CONSIDERED

##### A. Alternatives

The interdisciplinary team developed 6 alternative strategies to address the evaluation criteria. One of these (Alternative 1) is the No Action alternative. The remaining 5 alternatives express a range of trail management philosophies from provision of a minimally developed trail to one that is characterized by a variety of opportunities including those associated with resource development.

Recommendations for land allocations for Intensive Forest management, semiprimitive nonmotorized recreation, etc., will be made by the various agencies in their local land management planning efforts. Only the level of trail development is discussed in each alternative.

The following is a brief description of each alternative as to: (1) the level of recreation experience, and (2) the design/construction, and management strategy.

##### Alternative 1: No Action

This alternative defers or eliminates the opportunity for establishing the trail. If selected, a recommendation would be made to the State Trails Advisory Committee to remove the proposed route from the State Trails System.

##### Alternative 2: Minimally Developed - Most Difficult

**Experience Opportunity:** This alternative provides recreation experiences that will require a high degree of independence, and self-reliance through the application of outdoor skills. Trail activities will be physically demanding, stressful, and some degree of risk can be anticipated. Water sources may be available only once during 25 miles of travel. The trail user can expect to encounter no more than two other groups per day.

**Design/Construction and Management Strategy:** The trail will essentially remain undeveloped with the exception of route markers to define the route through intensive resource management areas, to route the user away from exceptionally hazardous areas, or to protect fragile and sensitive resources. Management will utilize off-site techniques for use control such as guides, maps, brochures, travel logs, etc. Signs will be located at designated termini to inform users of route difficulty.

**Alternative 3:** Low Development More-Difficult

**Experience Opportunity:** This alternative provides recreation experiences that require a substantial degree of self-reliance and skills in woodsmanship. Trail activities may be mentally and physically demanding. Water sources may be available only once during 15 miles of travel. Trail user should not encounter more than five other groups per day.

**Design/Construction and Management Strategy:** A trail will be marked and/or signed to facilitate use. Trail tread construction will be limited to those areas where route markers are determined unsatisfactory for directing use. Management will utilize off-site techniques for use control. Regulatory signing may be necessary at trail access points to inform and modify use. Use of educational and interpretive signing will be limited to key features.



Alternative 4: Moderate Development - Difficult

Experience Opportunity: This alternative requires a moderate degree of self-reliance and woodsmanship skills. Trail activities may require physical and mental challenges but will be restricted to short segments. Hazards are mostly eliminated and risks are low. Water sources may be available once during 10 miles of travel. Trail users should not encounter more than 12 other groups per day during 80 percent of the use season.

Design/Construction and Management Strategy: A trail having a continuous tread will be constructed for user convenience. Steep grades (over 12%) will be avoided and permanent structures such as bridges, steps, cribbing, etc; will be provided. However, the overall design of the trail will reflect a rustic mood using native materials, treated rough lumber, or similar material to maintain a natural appearing trail environment. Extensive educational and interpretive signing will be provided along the entire route. Primitive roads may be used to route trail use where conflicts between these user groups are anticipated to be low.

Alternative 5: High Development - Easy

Experience Opportunity: This alternative requires a minimum degree of self-reliance and woodsmanship skills. Hazards and obstacles are removed or circumvented, eliminating stress, and anxiety. Opportunities for mental challenge through information and interpretation are provided. However, some degree of learned skill such as camping or physical ability such as backpacking may be required. Water sources may be available only once during 5 miles of continuous travel. Trail user should not encounter more than 16 other groups per day during 80% of the use season.

**Design/Construction and Management Strategy:** A trail having a continuous tread will be constructed. Surfacing with inhauled material (crushed rock) may be required along short segments of trail to mitigate resource impacts. Trail grades steeper than ten percent will be avoided. Clearing for overlooks, vistas, rest stops will be emphasized. A high degree of management control (signing, barricades, personnel, etc.) will be visible.

**Alternative 6:** Most Difficult to Easy

This alternative provides for a range of recreation trail experiences described in alternatives 2 through 5. Trail design, location, and management would provide trail experiences from the most difficult to easy. Group encounters may vary by level of trail development. Overall, the trail user should not encounter more than 10 other groups per day.



## V EFFECTS OF IMPLEMENTING TRAIL MANAGEMENT ALTERNATIVES

A. The following assumptions apply to the implementation of any of the alternatives:

1. Consideration of environmental impacts is an ongoing process by the agencies responsible for the trail. The ninety percent of the trail in public ownership has established environmental compliance procedures for consideration of wetlands, endangered species, cultural sites, and rights of Native Americans, and
2. Any action to develop new trail will include an environmental assessment to evaluate alternatives and provide coordination with appropriate responsible offices such as State Historic Preservation Offices for Cultural Resources and U.S. Fish and Wildlife for endangered species.

B. Resources associated with the trail environment, are all effected by the potential use levels prescribed under each alternative. The greater the potential use, the greater the potential effect on these elements. For example, an alternative with the lower capacities will have less potential adverse effect on soil, vegetation, water, wildlife, etc., than an alternative with a higher capacity. Irregardless of which alternative is selected, these effects are generally slight and will be forestalled by implementing mitigation measures to alleviate potential resource damage and conflicts.

1. Soil. Trail construction, use, and maintenance will result in limited soil compaction and displacement.
2. Water Quality. Water quality can be effected by trail construction and maintenance. The potential for pollution of water sources is

Increased over the natural situation through introduction of coliform and other bacteria from human and animal waste. As recreation use levels increase so does the potential for contamination of water sources. The effects are long-term but not irreversible.

3. Minerals and Energy. Previous exploratory drilling for mineral and energy resources indicate a low potential for such development to occur within the trail corridor. Therefore, the effect of the trail on the potential development of energy resources is low. Furthermore, trail development does not preclude the practice of directional drilling for energy resources. Directional drilling would have little to no effect on recreation use on the trail.
4. Private Land. Private land is effected either by trespass by recreationist or by acquisition through easement. As use levels increase so does the potential for trespass onto contiguous private lands.

The cost to acquire easements would remain constant under all of the action alternatives. Easements would be established only to the extent necessary to provide passage for the user. Presently, funding does not exist to acquire easements. Until easements can be obtained across private land, the trail will be routed on existing public rights-of-ways.

5. Sensitive, Threatened or Endangered Species. Depending upon the location of the route, sensitive, threatened, or endangered species may be effected. These species vary in their tolerance to withstand recreation use. For example, certain wildlife species are subject to pressures from the presence and sound of users. These effects,



should they occur, can be mitigated by implementing appropriate use level controls or site specific actions such as relocation. Endangered species, where they occur, will be protected through environmental compliance procedures governing each agency.

6. Timber The Trail will have an effect on the timber resource where it traverses Forest lands allocated to timber management. At a minimum, this effect will result in increase costs due to modifications to standard harvesting practices to mitigate impacts to the trail. Hand piling or logging debris and rehabilitating surface disturbance will cost approximately \$400.00 per mile. At a minimum the route will traverse approximately 150 miles of commercial Forest land costing approximately \$60,000 for mitigation per rotation.

7. Commercial Livestock Grazing. The effect the trail users will have on grazing activities is the potential for damage to range improvements; primarily fences. These impacts can be mitigated by providing fence crossings. The cost of each fence crossing is estimated at \$800.00. Total fence crossings required will vary by the alternative route selected. At a minimum, an estimated twenty five crossings will be necessary, costing approximately \$20,000.00 for the entire route

8. Recreation. All the action alternatives will have a beneficial effect on the recreation resource by expanding trail related opportunities above the present level. Projected use for trail recreation is expected to increase by 20,000 RVD's in the next fifty years.

Even though Trail opportunities are expanded for the recreationists,



the degree of outdoor skills required by the user vary by alternative. Alternatives two and three require a high degree of skill in orienteering. Such development may discriminate against the less experienced trail user. Conversely, the higher developed alternatives, four and five, may discriminate against the more experienced user. Conflicts between the types of users is most likely to occur in alternative six. The potential for search and rescue for inexperienced trail users is most likely to occur in alternatives two and three.

The opportunity for the trail users to obtain potable water for drinking are limited primarily to developed recreation sites. Consequently, the user may resort to surface water sources to satisfy their needs. These sources are highly susceptible to contamination and could have adverse effects to their health, safety and welfare.

Trail use capacities are shown below in table 4 (see Appendix 3 for methodology). These figures are estimates of the maximum level of trail use that is consistent with providing a quality recreation experience described in each alternative. Alternative two provides the least capacity for use while alternative five provides the greatest. Controls for regulating and managing use is most likely to occur in alternative two.

Table 4 Trail Capacity Estimates by Alternative

<u>Alternative</u>	<u>Estimate Capacity (RVDs per year)</u>
1. No Action	0
2. Most Difficult	3,962
3. More Difficult	10,565
4. Difficult	31,695
5. Easy	56,347
6. Most Difficult to Easy	13,901



9. Cultural Resources. Unauthorized collection of cultural resources by trail users could be a problem under any of the action alternatives. These effects are cumulative, and the consumption and progressive destruction of cultural resources may impair future scientific research or the preservation of representative examples. However, the Antiquities Act, as amended, require that cultural resource inventories be conducted prior to Trail development; and that culturally significant resources, if found, must be protected through mitigation and evaluation.

10. Costs for Trail Development, Operation, and Maintenance. As shown below in table 5, alternative two provides the lowest cost per mile of trail while alternative five provides the highest (see Appendix 4 for cost analysis).

Table 5 Trail Costs by Alternative

<u>Alternative</u>	<u>Cost per Mile</u>
1. No Action	
2. Most Difficult	\$ 800
3. More Difficult	2,575
4. Difficult	4,145
5. Easy	6,190
6. Most Difficult to Easy	3,423

In discussing the effects of Implementation, it is necessary to describe the effects in terms that are both broad and subjective. The management objectives and strategies contained in each alternative will be translated into on-the-ground effects through each agency's project level Environmental Assessments and Implementation plans. The Comprehensive Plan will recognize that project level EA's will identify the resources available; the appropriate levels of trail development that will result from implementing the direction identified in the alternative selected; and the trade-offs to be made in order to be acceptable for the Trail.

Table 5 displays the effects of Implementation by alternative:



#### 4: Effects of implementing trail management alternatives.

ves	Effects by Resource								
	Soil/Water	Mineral/Energy	Impact on Private Land	Sensitive Threatened and/or Endangered Species	Tiiber	Commercial Livestock Grazing	Recreation	Cultural Resources	Cost Per Mile Of Trail (Includes Development, Operation & Maintenance Only)
	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
development -	LOW. Potential for pollution of water sources through introduction of coliforms. Limited soil compaction and erosion will occur through trail development and use.	LOW. Previous exploration has yet to locate resources deposits to sustain an economically viable operation.	LOW. Impacts may occur through trespass and acquisition of easements	MINIMAL. Impacts may occur by recreationists wandering through sensitive habitat areas. However, probability for such impacts to occur is very low.	LOW. A reduction in timber harvesting may occur to alleviate impacts to the Trail. A maximum of 3 acf per mile will be foregone as a result of Trail development.	LOW. Damage to range improvements such as fences, etc., may occur as a result of increase recreation use on range allotments.	Trail opportunities will be expanded above current level. However, Trail is designed for the most experienced trail user requiring a high degree of skill in or on entering, etc. Potential for search and rescue to occur for inexperienced trail users is low. Recreation use capacity is estimated at 4,000 RMD's per year. Regulation of use may be necessary to manage use within capacity.	LOW. Impacts may occur through unauthorized collection.	\$ 800 per mile
it -	LOW (see above alternative 2)	LOW (see above alternative 2)	LOW. (See above alternative 2)	LOW. The potential for impacts to occur may be slightly higher than alternative 2 due to the increase in capacity for recreation use.	LOW. (see above alternative 2)		Trail is designed for the more experienced trail user requiring a moderate degree of skill in orienteering, etc. Potential for search and rescue operations to occur is very low. Recreation use capacity is estimated at 10,500 RMD's per year.	LOW. (See above alternative 2)	\$ 2,575 per mile
development -	LOW (see above alternative 2)	LOW (see above alternative 2)	LOW. (See above alternative 2)	LOW. (See above alternative 3)	LOW. (See above alternative 2)	LOW. (See above alternative 2)	A moderate degree of outdoor skills are required by the trail user. Recreation use capacity is estimated at 31,700 RMD's per year.	LOW. (See above alternative 2)	\$ 4,145 per mile
ment -	LOW (see above alternative 2)	LOW (see above alternative 2)	LOW. (See above alternative 2)	MODERATELY LOW. The potential for impacts to occur are slightly higher than alternative 4 due to the substantial increase in capacity for use.	LOW. (See above alternative 2)	LOW. (See above alternative 2)	A minimal degree of outdoor skills are required by the trail user. Recreation use capacity is estimated at 35,347 RMD's per year.	LOW. (See above alternative 2)	\$ 6,190 per mile
it to	LOW (see above alternative 2)	LOW (see above alternative 2)	LOW. (See above Alternative 2)	LOW. The potential for impacts to occur.	LOW. (See above alternative 2)	LOW. (See above alternative 2)	Trail is designed to accommodate a range of experience and skill levels. There is potential for conflict to occur between these users. Recreation use capacity is estimated at 14,000 RMD's per year.	LOW. (See above alternative 2)	\$ 3,425 per mile



**Table 4:** Effects of implementing trail management alternatives.

Alternatives	Effects by Resource						
	Soil/Water	Mineral/Energy	Impact on Private Land	Sensitive Threatened and/or Endangered Species	Tiiber	Commercial Livestock Grazing	Recreation
1. No Action	NONE	NONE	NONE	NONE	NONE	NONE	NONE
2. Minimal Development - Most Difficult	LOW. Potential for pollution of water sources through introduction of coliforms. Limited soil compaction and erosion will occur through trail development and use.	LOW. Previous exploration has yet to locate resources deposits to sustain an economically viable operation.	LOW. Impacts may occur through trespass and acquisition of easements.	MINIMAL. Impacts may occur by recreationists venturing through sensitive habitat areas. However, probability for such impacts to occur is very low.	LOW. A reduction in timber harvesting may occur to alleviate impacts to the Trail. A maximum of 3 acf maximum of 3 acf per mile will be foregone as a result of Trail development.	LOW. Damage to range improvements such as fences, etc., may occur as a result of increased recreation use on range allotments.	Trail opportunities will be expanded above current level. However, Trail is designed for the most experienced trail user requiring a high degree of skill in or on entering, etc. Potential for search and rescue to occur for inexperienced trail users is low. Recreation use capacity is estimated at 4,000 RID's per year. Regulation of use may be necessary to ensure use within capacity.
3. Low Development - More Difficult	LOW (see above alternative 2)	LOW (see above alternative 2)	LOW. (See above alternative 2)	LOW. The potential for impacts to occur may be slightly higher than alternative 2 due to the increase in capacity for recreation use.	LOW. (see above alternative 2)		Trail is designed for the more experienced trail user requiring a moderate degree of skill in orienteering, etc. Potential for search and rescue operations to occur is very low. Recreation use capacity is estimated at 10,500 RID's per year.
4. Moderate Development - Difficult	LOW (see above alternative 2)	LOW (see above alternative 2)	LOW. (See above alternative 2)	LOW. (See above alternative 3)	LOW. (See above alternative 2)	LOW. (See above alternative 2)	A moderate degree of outdoor skills are required by the trail user. Recreation use capacity is estimated at 31,700 RID's per year.
5. High Development - Easy	LOW (see above alternative 2)	LOW (see above alternative 2)	LOW. (See above alternative 2)	MODERATELY LOW. The potential for impacts to occur are slightly higher than alternative 4 due to the substantial increase in capacity for use.	LOW. (See above alternative 2)	LOW. (See above alternative 2)	A minimal degree of outdoor skills are required by the trail user. Recreation use capacity is estimated at 55,547 RID's per year.
6. Most Difficult to Easy	LOW (see above alternative 2)	LOW (see above alternative 2)	LOW. (See above Alternative 2)	LOW. The potential for impacts to occur.	LOW. (See above alternative 2)	LOW. (See above alternative 2)	Trail is designed to accommodate a range of experience and skill levels. There is potential for conflict to occur between these users. Recreation use capacity is estimated at 14,000 RID's per year.

## VI MITIGATING MEASURES

The mitigating measures listed below, apply to all of the alternatives except the No Action alternative. Additional measures will be considered by the various agencies during their local planning efforts.

### Resource

### Mitigating Measure

#### Soil/Water

The trail shall be located, designed, and constructed to avoid any adverse impacts to the soil and water resources per USDA Travelways Handbook.

#### Gas and Oil Leases:

No occupancy or other surface disturbance will be allowed within 100 feet.

To maintain aesthetic values, all semi-permanent and permanent facilities may require painting or camouflage to blend with the natural surroundings.

#### Locatable Minerals:

Trail relocation, restoration, etc., is subject to an approved operation plan for mineral development.

#### Private Land:

The Trail shall be located to avoid traversing private lands to the extent practicable. The trail may temporarily follow County, State and Federal roads until easements can be obtained to traverse private land. Where the trail is routed adjacent to private lands the route shall be marked to avoid unwanted trespass on to private lands.

#### Threatened, Rare and Endangered Species:

The trail shall be located to avoid any adverse effects to threatened, endangered or sensitive species.



**Timber:**

Timber management activities adjacent to the trail corridor shall be designed and conducted to provide passage for the trail user. These activities may be easily noticed if not strongly dominant to the user from the trail. However, such activities shall be designed to blend in with the natural terrain. Logging debris is not permitted to remain on the trail. Surface disturbance resulting from log skidding, etc., across the trail will be rehabilitated within one year after the completion of the sale.

**Commercial Livestock  
Grazing**

Fence crossings will be minimized to the extent practicable. Where necessary, fence stiles, gates, etc., shall be provided for passage to the trail user and to eliminate fence damage.

**Archaeology:**

The trail will be located to avoid any adverse effects to cultural resources.

**Recreation (water)**

Water availability (or the lack thereof) is a part of the experience on the Southern Oregon Intertile Trail. Sources will be limited primarily to surface water along the trail. As funding allows other sources, wells, pumps, tanks, etc., will be developed to fill in the gaps to meet the experience level described in the alternatives. During the interim, trail users will be warned of potential contamination of surface water through information brochures, signing, etc.

**Recreation (carrying capacity and overuse):** The following carrying capacity guidelines indicate the maximum amount of recreation use desired by level of trail development. These guidelines indicate the amount of use that is consistent with some measure of quality in the recreation experience described in each level of trail development.

Specific management actions aimed at preventing overuse will be undertaken on a case-by-case basis by each local administering unit after coordination with adjacent managing units.

**Minimal Development -  
Most Difficult:**

Maintain opportunity to travel with not more than two encounters per day between groups. Group size may be any combination of persons and recreation livestock not exceeding 6 (without written authorization).

**Low Development -  
More Difficult**

No more than five encounters with other traveling groups per day during eighty percent of the use season. Group size may be any combination of persons and recreation livestock not exceeding eight (without written authorization).

**Moderate Development-  
Difficult**

No more than twelve encounters with other traveling groups per day during eighty percent of the use season. Group size may be any combination of persons and recreation livestock not exceeding twelve (without written authorization).



High Development -  
Easy

No more than sixteen encounters with other traveling groups per day during eighty percent of the use season. Group size may be any combination of persons and recreation livestock not exceeding sixteen (without written authorization).

Most Difficult to  
Easy

Group encounters will vary by level of trail development. On the average, the group encounters should not exceed 10 per day. Group size may vary from six to sixteen.

## VII EVALUATION OF TRAIL MANAGEMENT ALTERNATIVES

Each alternative was evaluated as to the degree it satisfied the evaluation criteria (see Section III for evaluation criteria). Based upon the evaluation, the alternatives were then rated numerically to show the degree to which they satisfied each criterion. This process provided a method to determine which alternative satisfied the evaluation criteria the best. The matrix shown in Table 5 and 6 provides the evaluation and rating of alternatives.

In summary, alternatives Three, Four, and Five rated equal to or less than Alternative One, No Action. These alternatives, because of their rating in relation to the No Action Alternative, are eliminated from further consideration.

Alternatives Two and Six rated higher than Alternative One.

Alternative Two provides the least conflicts with other resources, including sensitive species and cultural resources, the highest degree of self reliance and application of outdoor skills, and the best benefit/cost relationship. However, Alternative Two does not provide for a range of trail user experience levels.

Alternative Six, when compared to Alternative Two provides a slightly higher potential for conflict with other resources, and a lower benefit/cost relationship. However, Alternative Six provides for a full range of user experience levels when compared to Alternative Two.



**Table 5:** Evaluation of trail management alternatives one through three.

Evaluation Criteria	Assigned Weight	Alternative 1: No Action		Alternative 2: Minimal Development		Alternative 3: Low Development	
		Evaluation	Score	Evaluation	Score	Evaluation	Score
1. Minimizes or reduces conflicts with other resource management and land uses on Federal and State lands, i.e., timber production, livestock grazing.	5	No Conflicts	5	Low impact to other resource outputs. Other resource management activities will result in minimal mitigation costs to protect trail capital investment.	4	Low impact to other resource outputs. Other resource management activities will result in relatively higher mitigation costs to protect trail capital investment than alternative two.	3
2. Minimizes or reduces conflicts with private land use and development.	9	No Conflicts	9	Low impact to private land for acquisition of trail easements. Trespass onto private lands may occur but the potential is low due to low capacity for trail use.	7	Low impact to private land for acquisition of trail easements. Potential for trespass is higher than alternative 2 due to increased capacity for trail use.	6
3. Meets the needs of the equestrian and hiker for information/education, and interpretation.	7			Trail information will be provided only on maps and brochures. On-the-ground I & E will not be provided.	2	Trail information will be provided by maps, brochures, and limited on-the-ground I & E only at key features.	4
4. Meets the needs of the equestrian and hiker for the basics of safety, proximity to surface water sources, and access.	10			High degree of self reliance and outdoor skills are required. Potential for trail user to become disoriented is high. Long distances between potable water sources could result in health problems due to trail users drinking from contaminated water sources.	4	Moderate to high degree of self reliance and outdoor skills are required. Potential for trail user to become disoriented is moderate. Distances between potable water sources could result in health problems due to trail users drinking from contaminated water sources. However, the potential is not as high as alternative two.	5
5. Provides for range of trail experiences.	8			Provides for a limited range of trail user experience levels. Trail is designed primarily for the most experienced trail user.	2	Provides for a limited range of trail user experience levels. Trail is designed primarily for the more experienced trail user.	2
6. Minimizes or reduces conflicts with sensitive and/or threatened plant and animal communities/habitats.	10	No Conflicts	10	Potential for conflicts is very low with respect to level of trail development and capacity for trail use.	8	Potential for conflicts is low with respect to level of trail development and capacity for trail use.	6
7. Minimizes or reduces conflicts with significant archaeological or historical sites which could be impacted by construction or use.	10	No Conflicts	10	(same as above)	8	(same as above)	6
8. Optimizes benefits/costs in terms of recreation use, trail development operation and maintenance.	6			Provides benefit/cost of: 0.41/1.00	6	Provides a benefit/cost of: 0.11/1.00	1
Total Score	(65)		34		41		33

# Table 6: Evaluation of trail ma

Evaluation Criteria	Assigned Weight	
1. Minimizes or reduces conflicts with other resource management and land uses on Federal and State lands, i.e., timber production, livestock grazing.	5	
2. Minimizes or reduces conflicts with private land use and development.	9	
3. Meets the needs of the equestrian and hiker for information/education, and interpretation.	7	
4. Meets the needs of the equestrian and hiker for the basics of safety, proximity to surface water sources, and access.	10	
5. Provides for range of trail experience.	8	
6. Minimizes or reduces conflicts with sensitive and/or threatened plant and animal communities/habitats.	10	
7. Minimizes or reduces conflicts with significant archaeological or historical sites which could be impacted by construction or use.	10	
8. Optimizes benefits/costs in terms of recreation use, trail development operation and maintenance.	6	
Total Score	(65)	



## e 6: Evaluation of trail management alternatives four through six.

Criteria	Assigned Weight	Alternative 4: Moderate Development	Score	Alternative 5: High Development	Score	Alternative 6: Minimal to High Development	Score
		Evaluation		Evaluation		Evaluation	
or reduces conflicts with other resource uses and land uses on Federal and State lands, timber production, livestock grazing.	5	Low impact to other resource outputs. Other resource management activities will result in relatively higher mitigation costs to protect trail capital investment than alternative three.	2	Low impact to other resource outputs. Other resource management activities will result in relatively higher mitigation costs to protect trail capital investments than alternative four.	1	Low impact to other resource outputs. However, other resource management activities will result in mitigation costs to protect trail capital investment at a level between alternatives three and four.	2
or reduces conflicts with private land use development.	9	Low impact to private land for acquisition of trail easements higher than alternative three due to increase capacity for trail use.	4	Low impact to private land for acquisition of trail easements. Trespass is higher than alternative four due to increase capacity for trail use.	3	Low impact to private land for acquisition of trail easements. Potential for trespass is at a level between alternatives three and four due to capacity for trail use.	5
needs of the equestrian and hiker for orientation, education, and interpretation.	7	Trail information will be provided by maps, brochures, and on-the-ground I & E.	6	Trail information will be emphasized through maps, brochures, and on-the-ground I & E.	7	Trail information will be provided by maps and brochures. On-the-ground I & E will be commensurate with level of trail development.	5
needs of the equestrian and hiker for the safety, proximity to surface water sources, etc.	10	Low to moderate degree of self reliance and outdoor skills are required. Potential for trail user to become disoriented is low. Potable water sources will be provided at a frequency to minimize the potential for users to use contaminated water sources.	8	Low degree of self reliance and outdoor skills are required. Very low potential for the trail user to become disoriented. Trail facilities will be maximized for the convenience of the trail user.	10	Low to high degree of self reliance and outdoor skills are required. Potential for trail user to become disoriented and to use contaminated water is moderately low.	7
for range of trail experience.	8	Provides for a limited range of trail user experience levels. Trail is designed primarily for the trail user with a moderate amount of knowledge/experience in outdoor skills.	2	Provides for a limited range of trail user experience levels. Trail is designed primarily for the trail user with very limited experience/knowledge of outdoor skills.	2	Provides for a wide range of trail user experience levels. Trail is designed for the most experienced to the least experienced trail user.	8
or reduces conflicts with sensitive and/or wild plant and animal communities/habitats.	10	Potential for conflicts is higher than alternative three with respect to level of trail development and capacity for trail use.	4	Potential for conflicts is higher than alternative four with respect to level of trail development and capacity for trail use.	2	Potential for conflicts is estimated at a level between alternatives three and four with respect to level of trail development and capacity for trail use.	7
or reduces conflicts with significant regional or historical sites which could be affected by construction or use.	10	(Same as above)	4	(Same as above)	2	(Same as above)	7
benefits/costs in terms of recreation and development operation and maintenance.	6	Provides a benefit/cost of: 0.17/1.00	4	Provides a benefit/cost of: 0.14/1.00	2	Provides a benefit/cost of: 0.16/1.00	3
Total Score	(65)		34		29		44



## VIII IDENTIFICATION OF PREFERRED TRAIL MANAGEMENT ALTERNATIVE

Based upon the evaluation of alternatives, Alternative Six is the preferred. It is consistent with relevant laws, executive orders, and regulations and is responsive to the identified issues, and concerns. This alternative meets all the evaluation criteria and represents a reasonable compromise between the trail and its users, and the national priorities for other goods and services from both public and private land.



## IX ALTERNATIVE ROUTES

A. Criteria Used Identifying Alternative Routes. The Interdisciplinary Team developed the following criteria, based upon the issues in Section III, to identify the alternative routes:

1. Minimizes or reduces conflicts with other resource management and land uses; i.e., timber production, mineral resource development, and commercial livestock management. (Responds to concern No. 1)
2. Minimizes or reduces conflicts with private land use and development. (Responds to Issue No. 2)
3. Follows existing or proposed trails, or primitive roads. (responds to concerns #'s 1 and 3)
4. Minimizes or reduces conflicts between recreation user groups; i.e., motorized versus non-motorized. (Responds to concern No. 3)
5. Provides for a range of recreation opportunity spectrum settings consistent with land management objectives. (Responds to concern No. 3)
6. Minimizes or avoids conflicts with sensitive and/or threatened plant and animal communities/habitats. (Responds to concern No. 3)
7. Minimizes or reduces conflicts with significant archeological or historical sites which could be impacted by construction or use. (Responds to concern No. 3)
8. Provides opportunities for cultural/historical interpretation and education. (Responds to concern No. 3)
9. Meets the needs of the trail user in providing surface water sources. (Responds to concern No. 4)

10. Provides opportunities to view distinctive landscape features/settings.

(Responds to concern No. 3)

Using the above criteria, approximately 570 miles of potential routes were identified. These routes were delineated into nineteen contiguous segments for the purposes of analysis and evaluation in determining the preferred route. Figures 4 through 7 show the location of the proposed segments. A summary of the resources associated with each segment is displayed below in Tables 7 and 8 (See Appendix B for a narrative description of each segment).

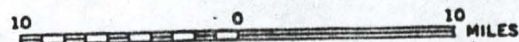
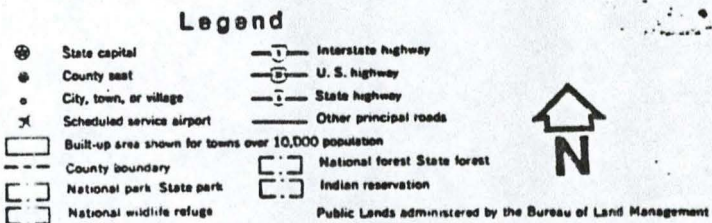


**Figure 4**



# **Southern Oregon Intertie Trail**

## **Proposed Routes**



**Scale 1:500,000**  
1 inch equals approximately 8 miles



Figure 5



Southern Oregon

Intertie Trail

Proposed Routes

Legend

- |  |  |
|--|--|
| ⊙ State capital  | — Interstate highway   |
| ● County seat  | — U.S. highway   |
| ○ City, town, or village                               | — State highway  |
| ✕ Scheduled service airport                            | — Other principal roads                                      |
| ▭ Built-up area shown for towns over 10,000 population | ▭ National forest State forest                               |
| ▭ County boundary                                      | ▭ Indian reservation   |
| ▭ National park State park                             | ▭ Public Lands administered by the Bureau of Land Management |
| ▭ National wildlife refuge                             |  |



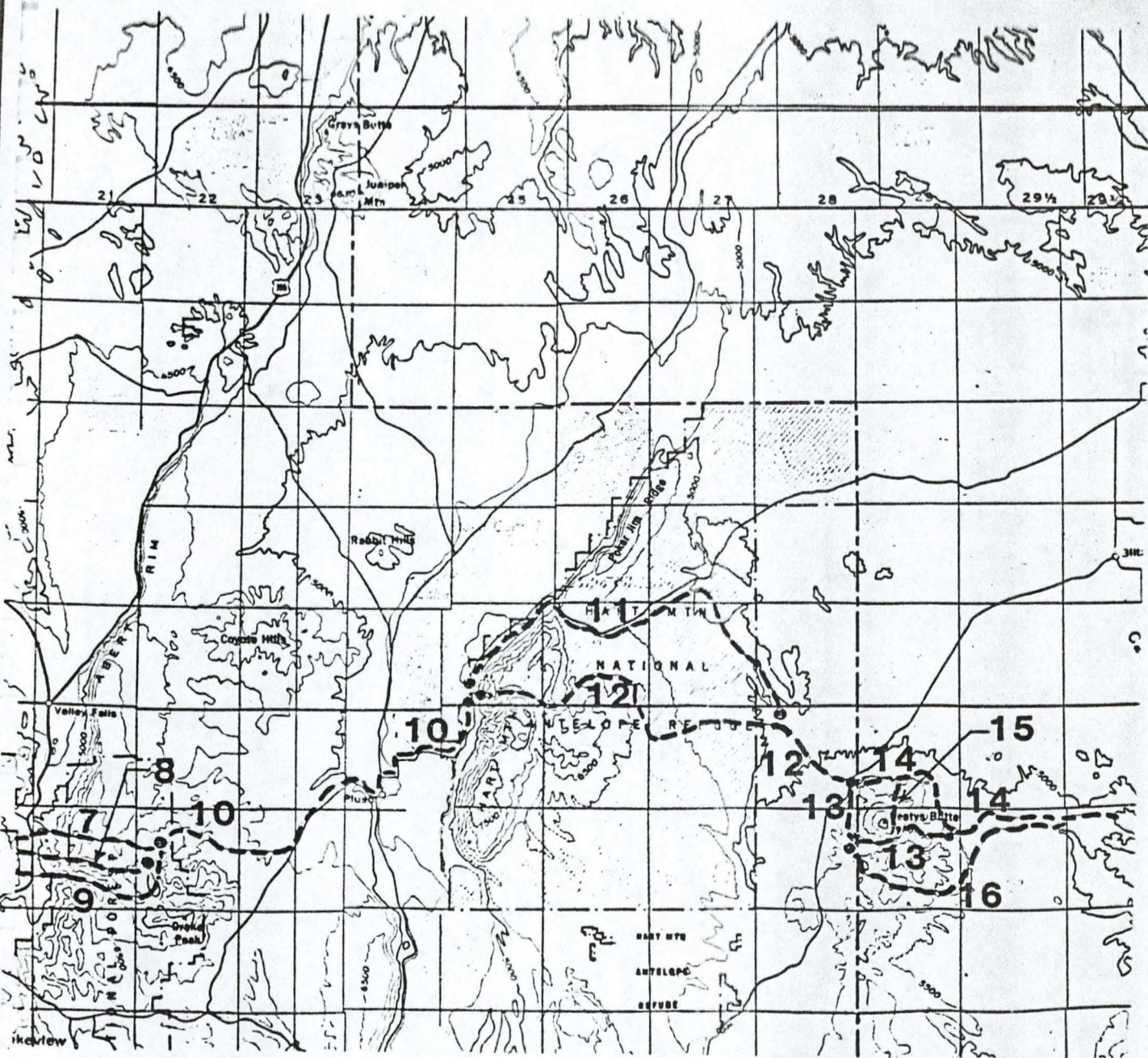
10 0 10 MILES

Scale 1:500,000

1 inch equals approximately 8 miles



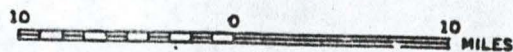
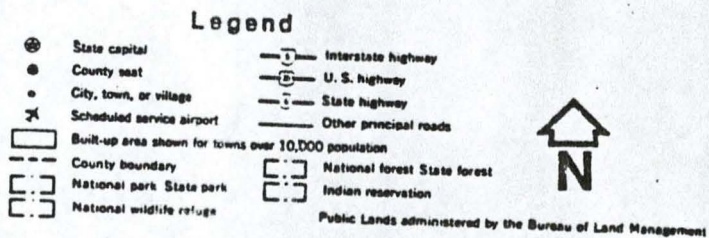
**Figure 6**



## Southern Oregon

## Intertie Trail

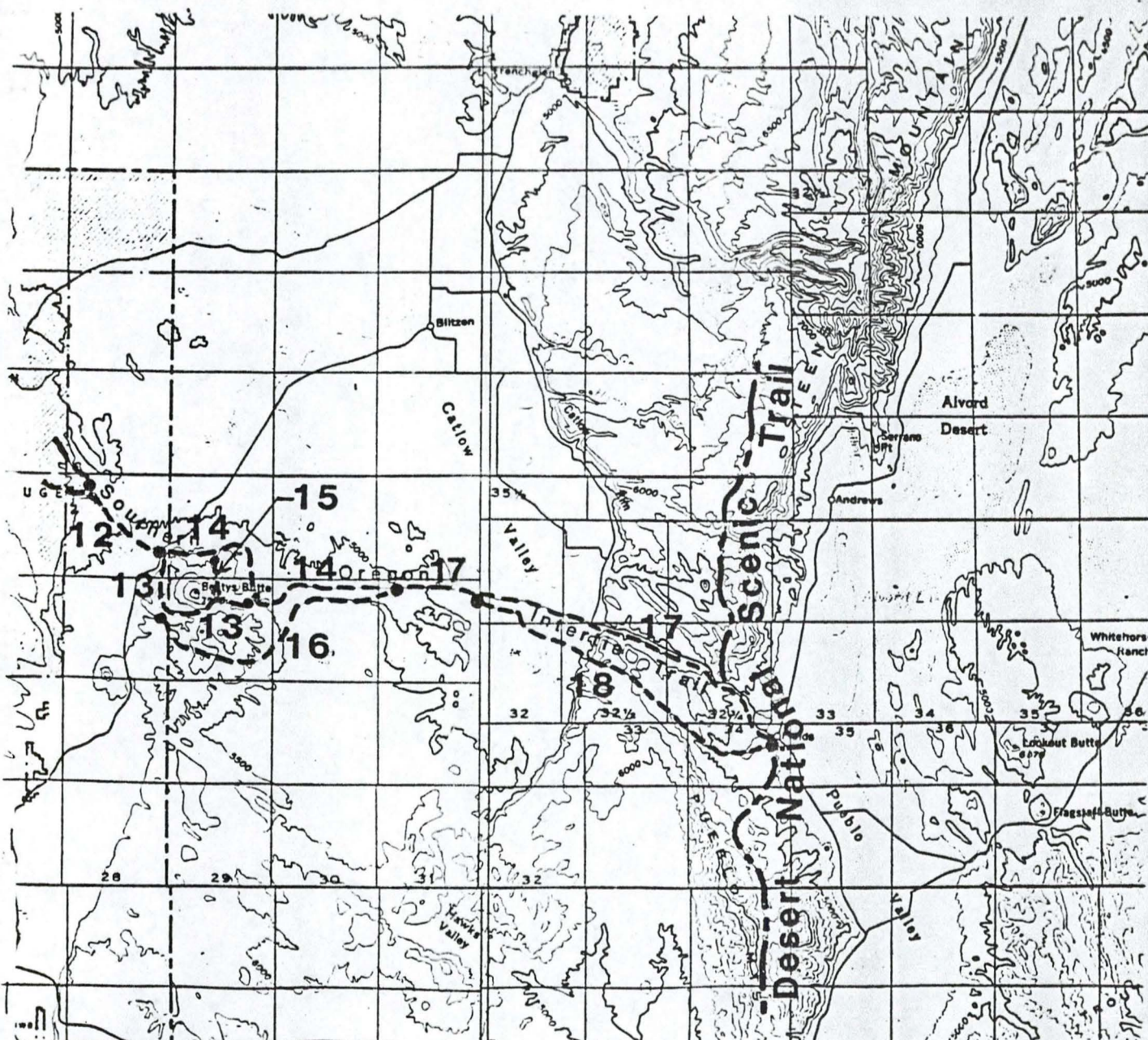
## Proposed Routes



Scale 1:500,000  
1 inch equals approximately 8 miles



**Figure 7**



**Southern Oregon**

**Intertie Trail**

**Proposed Routes**

**Legend**

- |  |  |
|--|--|
| ⊙ State capital  | — Interstate highway   |
| ● County seat  | — U. S. highway  |
| • City, town, or village                               | — State highway  |
| ✕ Scheduled service airport                            | — Other principal roads                                      |
| ▭ Built-up area shown for towns over 10,000 population | ▭ National forest State forest                               |
| ▭ County boundary                                      | ▭ Indian reservation   |
| ▭ National park State park                             | ▭ Public Lands administered by the Bureau of Land Management |
| ▭ National wildlife refuge                             |  |



10 0 10  
MILES

**Scale 1:500,000**  
1 inch equals approximately 8 miles



**Table 7:** Summary description of proposed route segments.

Segment No.	Segment Name	Total Miles Per Route Segment	Available Developed Recreation Site	Miles on Existing Roads		Miles Undeveloped	Route Miles by Land Ownership							Special Uses	Miles of Route by Special Area Classification	RDS Setting				
					Trails		Winema NF	Fremont NF	BLM	FWS Service	State	County	Private			SPM	SPN	R-M	R-M	Rural
1	Ranger Spring to Antler Spring	74.8	5CGs	6.9	11.6	45.3	71.2	2.2			1.0	4.0		CM		9.0		60.9		8.5
2	Miller Lake to Antler Spring	45.5	1 CG	4.2		41.3	45.5						1.0	-		3.0		42.5		
3	Antler Spring to Dead Indian Mountain	41.2	1 CG		2.2	39.0		39.6					1.6	-		4.0	0.3	8.5	28.7	
4	Antler Spring to North Winter Rim	42.9	2 CG	2.3		24.0		41.3					1.6	-		2.5	0.3	11.8	29.6	
5	Antler Spring to Fremont Point	36.2	2 CG	11.5		24.7		36.0					0.3	-		0.3		16.8	19.3	
6	Picture Rock Pass to Counts Ranch	61.2		47.4	13.8			54.5	3.2				3.5	CM		11.6	35.2	10.2	4.2	
7	Counts Ranch to Can Springs via Chandler State Park	17.1	1 WS	5.2		11.9		14.3					2.8	-				5.3	9.6	3.2
8	Counts Ranch to Can Springs via Loveless Creek	19.1		16.3		2.8		13.8	1.3				4.0	-				4.7	9.2	9.2
9	Counts Ranch to Can Springs via Drake-McDowell	29.6		7.3		22.3		25.4								6.0		4.3	14.8	4.5
10	Can Springs to DeGarmo Canyon	20.2		20.2				3.2				17.0						12.5		7.5
11	DeGarmo Canyon to West Spring via Hart Mountain Refuge Headquarters	30.3								6.8		21.8			(R)27.8			26.7		3.6
12	DeGarmo Canyon to West Spring via Indian Springs	33.1	1 CG	25.3		7.8			4.7	22.6	0.8		5.0		(R)22.6	6.8	23.3	3.0		
13	West Spring to Coyote Rim Well via West Gulch	27.2		13.3		13.9			26.9				0.3				27.2			
14	Field Camp to East Gulch Well via Fish Fin Rim	13.2		13.2					7.0		1.1		6.2		(WSA) 5.3		13.2			
15	Field Camp to Road Spring via Buena Vista Spring	6.1		6.1					2.9				3.2				6.1			
16	West Gulch to Coyote Rim Well via Surveyors Lake	26.4		20.2		6.2			25.7				0.7		(WSA) 5.7		26.4			
17	Coyote Rim Well to Desert Trail (Fields) via Long Hollow	22.4		22.4					11.2		1.2	8.2	1.8		(WSA) 3.2		8.3	12.9		1.4
18	Coyote Rim Well to Desert Trail (Fields) via McDade Cashe	24.1		17.2		6.9			21.5		1.2		1.4		(WSA) 4.7		16.2	5.3		2.6
TOTALS		570.8	18(altes)	292.7	39.2	299.7	187.9	232.5	104.4	29.4	6.3	51.0	37.6		120.5	52.4	156.9	286.3	114.4	45.0

LEGEND

CG - Campground  
CM - Common Minerals  
E - Eagle Management Area  
R - US Fish and Wildlife Service Refuge  
WS - Wayside/Reststop  
WSA - BLM Wilderness Study Area



**Table 8:** Summary description of proposed route segments.

Segment No.	Segment Name	Total Miles Per Route Segment	Landscape Attributes			Historical and Cultural Interpretive Opportunities	Threatened, Endangered Sensitive Wildlife & Plant Species	Miles of Plant P. Pine	P. Assoc.	Route by Community		Miles of Route by Commercial Forest
			Distinctive	Common	Minimal					LP	NPW	
1	Ranger Spring to Antler Spring	74.8	26.0	40.4	12.0	Yes	E		58.8	15.0		45.0
2	Miller Lake to Antler Spring	45.5	4.0	10.7	34.8	Yes		4.1		41A		25.4
3	Antler Spring to Dead Indian Mountain	41.2	5.2	20.8	15.0	No		19.0	7.6	7.0	7.4	33.0
4	Antler Spring to North Winter Rim	42.9	9.2	20.7	10.1	No		19.9	4.0	14.4	4.7	30.3
5	Antler Spring to Fremont Point	36.2	6.3	18.5	11.5	Yes	E	17.3	3.4	4.4	11.1	21.5
6	Picture Rock Pass to Counts Ranch	61.2	49.1	6.8	5.3	Yes	E	13.1	12.1	8.0	20.2	33.2
7	Counts Ranch to Can Springs via Chandler State Park	17.1	4.6	12.5		Yes		6.8	8.1		2.5	15.0
8	Counts Ranch to Can Springs via Loveless Creek	19.1	2.2	16.9		Yes		7.7	8.8	0.5	2.4	17.0
9	Counts Ranch to Can Springs via Drake-McDowell	29.6	14.4	15.2		Yes		8.1	7.9	0.1	13.5	16.1
10	Can Springs to DeGarmo Canyon	20.2	3.2	5.7	11.3	Yes		3.0			17.2	
11	DeGarmo Canyon to West Spring via Hart Mountain Refuge Headquarters	30.3	5.4	10.7	14.2						30.3	
12	DeGarmo Canyon to West Spring via Indian Springs	33.1	12.1	6.4	14.9						33.1	
13	West Spring to Coyote Rim Well via West Gulch	27.2		10.3	11.9						27.2	
14	Field Camp to East Gulch Well via Fish Fin Rim	13.2		8.3	3.9	Yes					13.2	
15	Field Camp to Road Spring via Buena Vista Spring	6.1		6.1		No					6.1	
16	West Gulch to Coyote Rim Well via Surveyors Lake	26.4		12.6	13.8	No					26.4	
17	Coyote Rim Well to Desert Trail (Fields) via Long Hollow	22.4		15.2	7.2	No					22.4	
18	Coyote Rim Well to Desert Trail (Fields) via McDade Cache	24.1	2.8	15.6	5.7	No					24.1	
TOTALS		570.6	170.4	293.8	183.6			99.0	169.5	165.8	269.8	360.2

LEGEND

CS - Campground  
 CM - Common Minerals  
 E - Eagle Management Area  
 R - US Fish and Wildlife Service Refuge  
 WS - Wayside/Reststop  
 WSA - BLM Wilderness Study Area



## X. EVALUATION OF ALTERNATIVE ROUTES.

To facilitate the evaluation process the Interdisciplinary Team identified those segments that would remain as a portion(s) of the preferred route. These routes either currently exist or have been proposed under existing management plans, or have no adverse impacts to other resources.

These segments include:

Segment 6: This route, approximately 60 miles in length, has been designated as the Fremont National Recreation Trail (Fremont N.F. 1978). Approximately 16 miles exists.

Segments 10-18: These routes include a total of 182 miles of which 137 miles follow existing travelways. These travelways consist of county roads (73 miles) and primitive wheel tracks requiring high clearance vehicles (65 miles). Approximately 35 miles are undeveloped.

The remaining segments; one through five and seven through nine, require further evaluation due to their potential conflicts with other resources. The following evaluation criteria was used by the Team to evaluate their suitability as preferred routes:

1. Minimizes or reduces conflicts with timber management activities.
2. Minimizes or avoids conflicts with sensitive, threatened, and/or endangered plant and animal communities/habitats.
3. Minimizes or avoids conflicts with sensitive archeological or historical sites which could be impacted by construction and use.
4. Minimizes or avoids conflicts with private land use and development.

The degree to which each of these segments satisfied the evaluation criteria was determined by using the following scale:

- 3 - Exceeds the criterion
- 2 - Satisfies the criterion
- 1 - Barely satisfies the criterion
- 0 - Falls to satisfy the criterion

Table 9 below displays the evaluation of the segments:



**Table 9:** Evaluation of alternative route segments.

EVALUATION CRITERIA	ROUTE ALTERNATIVES			
	Segment 1: Ranger Spring to Antler Spring (74.8 miles) Evaluation                      Score	Segment 2: Miller Lake to Jackson Creek (45.5 miles) Evaluation                      Score	Segment 3: Antler Spring to Dead Indian Mountain (41.2 miles) Evaluation                      Score	Segment 4: Antler Spring to Fremont Point (42.9 miles) Evaluation                      Score
1. Minimizes or reduces conflicts with timber management activities.	60% of the route traverses commercial Forest land available to intensive timber management practices.                      1	54% of the route traverses commercial Forest land available to intensive timber management practices.                      2	80% of the route traverses commercial Forest land available to intensive timber management.                      1	88% of the route traverses commercial Forest land available to intensive timber management.                      1
2. Minimizes or avoids conflicts with sensitive threatened, and/or endangered plant and animal communities/habitats.	Route traverses Klamath Marsh Bald Eagle Management Area.                      1	No known sensitive habitats are traversed.                      3	No known sensitive habitats are traversed                      3	Route traverses Thompson Reservoir Bald Eagle Management Area.                      1
3. Minimizes or avoids conflicts with sensitive archeological or historical sites which could be impacted by construction and use.	Route traverses sensitive Klamath Indian burial sites.                      1	No known sensitive sites are traversed.                      3	No known sensitive sites are traversed.                      3	No known sensitive sites are traversed.                      3
4. Minimizes or avoids conflicts with private land use and development.	Avoids traversing private land                      3	Avoids traversing private land.                      3	3% of the route traverses private land                      2	4% of the route traverses private land.                      2
Total Score for each route segment	6	11	9	7

EVALUATION CRITERIA	ROUTE ALTERNATIVES			
	Segment 5: Antler Spring to Fremont Point (36.2 miles) Evaluation                      Score	Segment 7: Counts Ranch to Can Springs via Chandler St. Park (17.1 miles) Evaluation                      Score	Segment 8: Counts Ranch to Can Springs via Loveless Creek (19.1 miles) Evaluation                      Score	Segment 9: Counts Ranch to Can Springs via Drake-McDowell (29.6 miles) Evaluation                      Score
1. Minimizes or reduces conflicts with timber management activities.	61% of the route traverses commercial Forest land available to intensive timber management.                      1	88% of the route traverses commercial Forest land available to intensive timber management.                      1	89% of the route traverses commercial Forest land available to intensive timber management.                      1	54% of the route traverses commercial Forest land available to intensive timber management.                      2
2. Minimizes or avoids conflicts with sensitive threatened, and/or endangered plant and animal communities/habitats.	Route traverses Thompson Reservoir Bald Eagle Management Area.                      1	No known sensitive habitats are traversed.                      3	No known sensitive habitats are traversed.                      3	No known sensitive habitats are traversed.                      3
3. Minimizes or avoids conflicts with sensitive archeological or historical sites which could be impacted by construction and use.	No known sensitive sites are traversed.                      3	No known sensitive sites are traversed.                      3	No known sensitive sites are traversed.                      3	No known sensitive sites are traversed.                      3
4. Minimizes or avoids conflicts with private land use and development.	4% of the route traverses private land                      2	16% of the route traverses private land.                      1	21% of the route traverses private land                      1	Avoids traversing private land.                      3
Total Score for each route segment	7	8	8	11



# XI IDENTIFICATION OF THE PREFERRED ROUTE

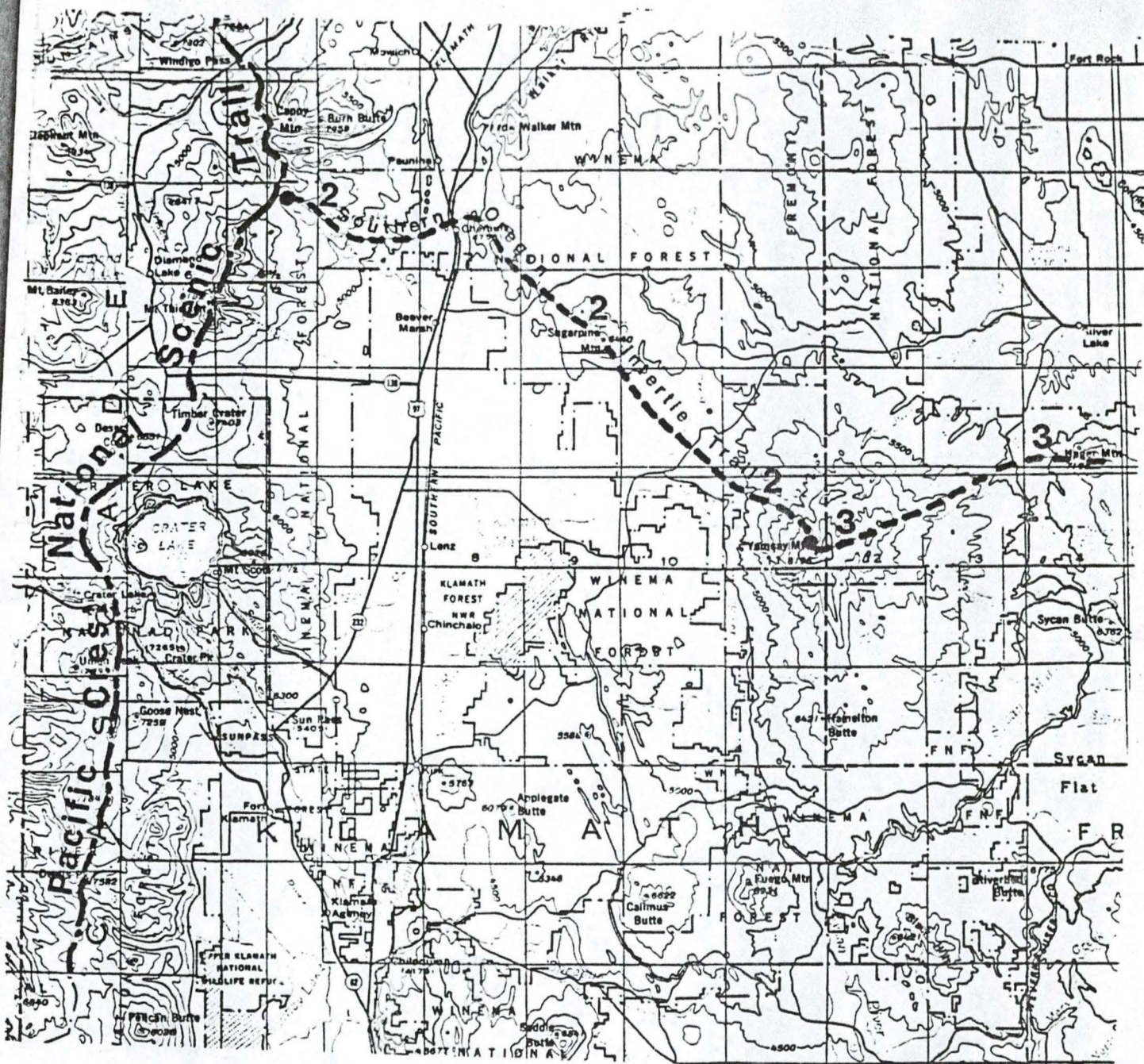
Based upon the evaluation of the alternative segments, the preferred route includes the following segments as shown below in Table 11 and in figures 8 through 11. This route meets all the evaluation criteria and is responsive to the identified issues, concerns and opportunities. The segments are in order traversing from west to east.

Table 10 The Preferred Southern Oregon Intertie Trail Route

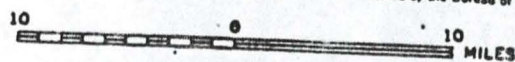
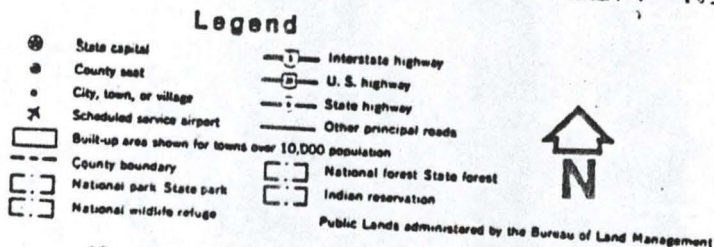
<u>Segment No.</u>	<u>Name</u>	<u>Miles</u>
2	Miller Lake to Antler Spring	45.5
3	Antler Spring to Dead Indian Mtn.	41.2
6	Picture Rock Pass to Counts Ranch	61.2
9	Counts Ranch to Can Springs via Drake-McDowell	29.6
10	Can Springs to DeGarmo Canyon	20.2
11	DeGarmo Canyon to West Spring via Hart Mtn. Refuge Headquarters	30.3
12	DeGarmo Canyon to West Spring via Indian Springs	33.1
13	West Spring to Coyote Rim Well via West Gulch	27.2
14	Field Comp to East Gulch Well via Fish Fin Rim	13.2
15	Field Comp to Road Spring via Buena Vista Spring	6.1
16	West Gulch to Coyote Rim Well via Surveyors Lake	26.4
17	Coyote Rim Well to Desert Trail (Fields) via Long Hollow	22.4
18	Coyote Rim Well to Desert Trail (Fields) via McDade Cashe	<u>24.1</u>
Total Miles		380.5



Figure 8



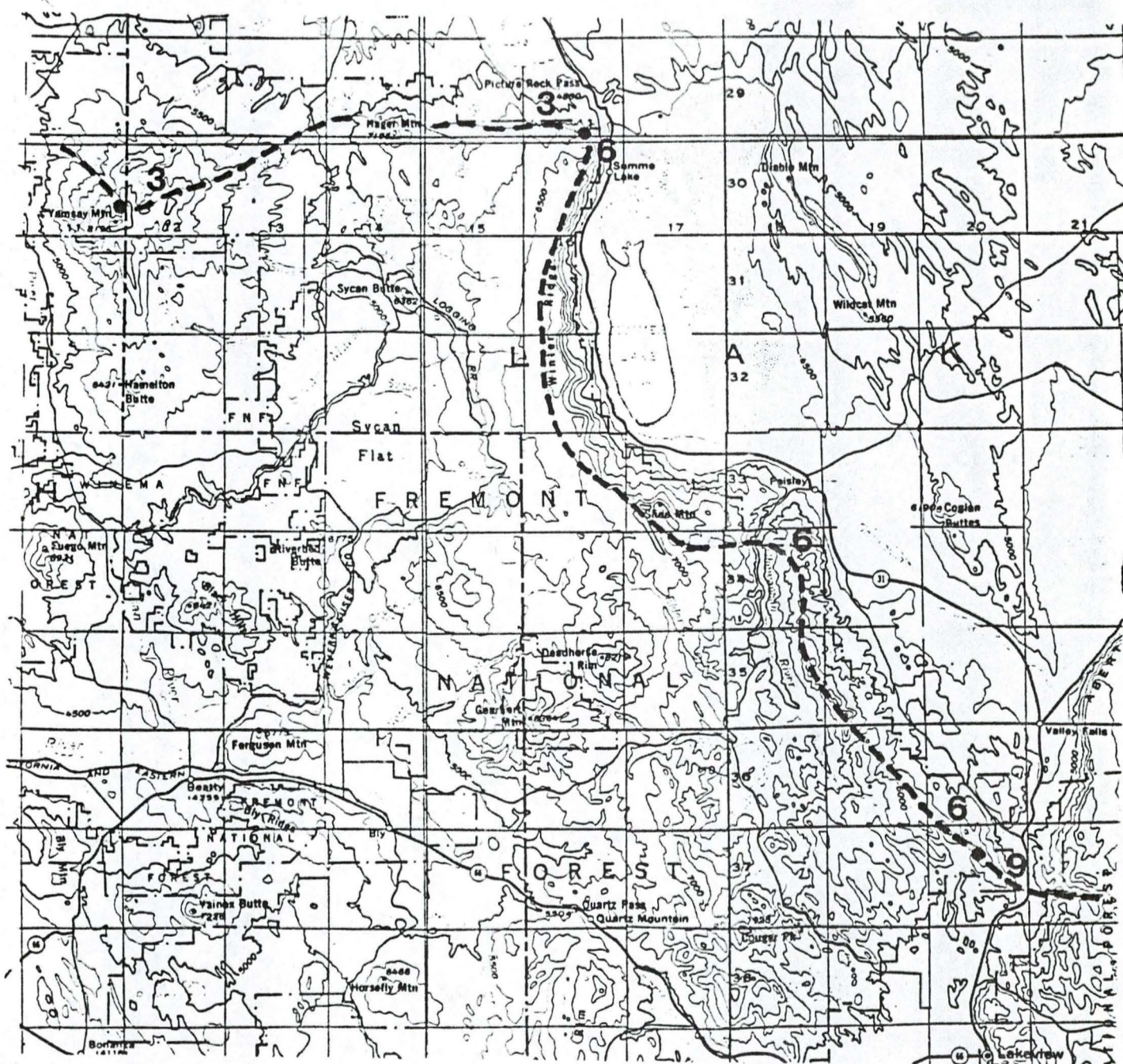
# Southern Oregon Intertie Trail Preferred Routes



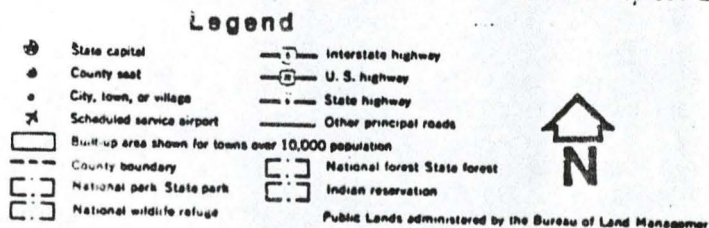
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# Figure 9



## Southern Oregon Intertie Trail Preferred Routes

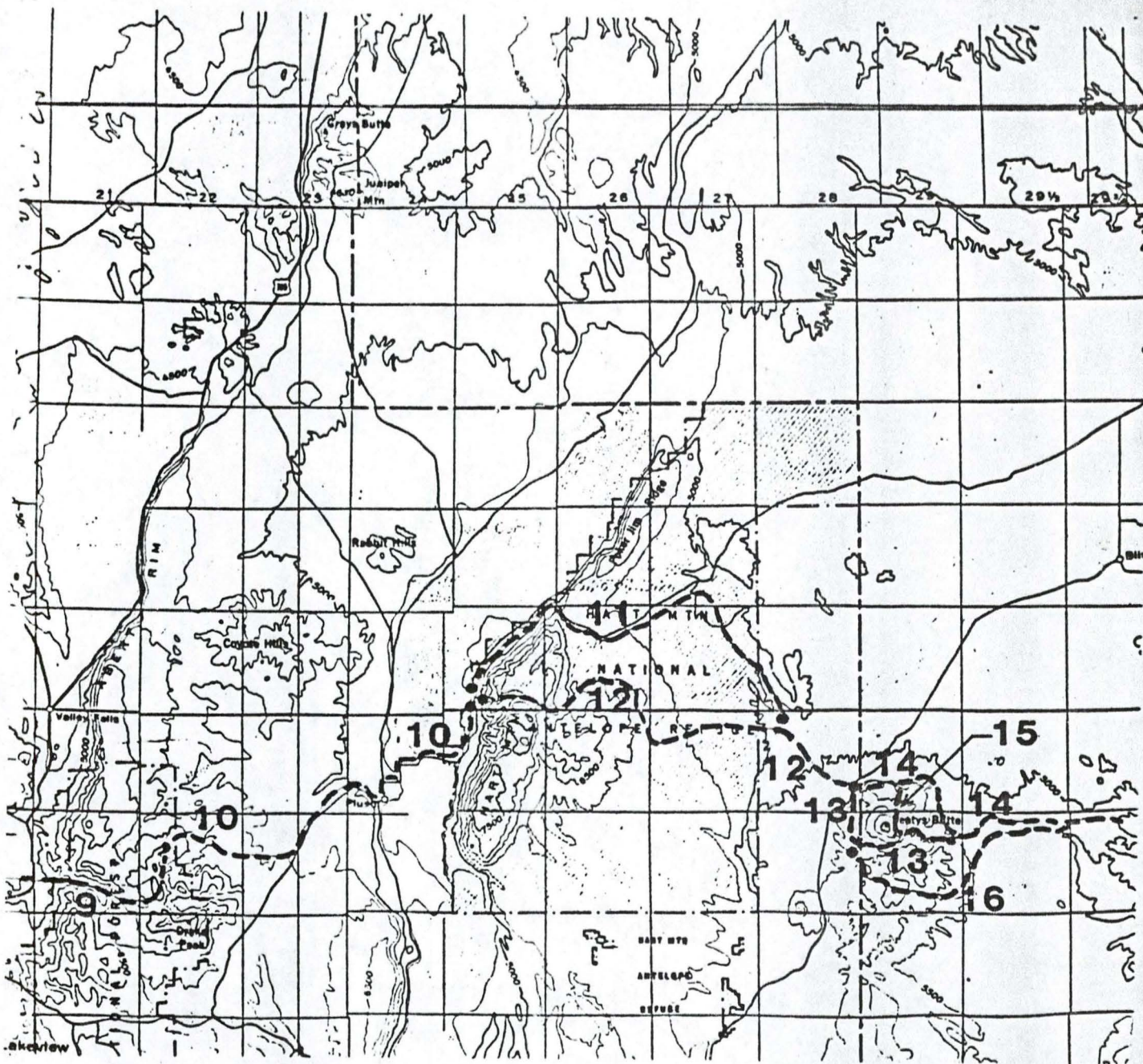


10 0 10  
MILES

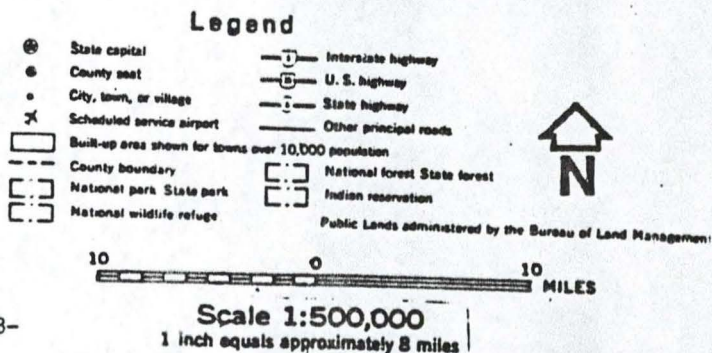
Scale 1:500,000  
1 inch equals approximately 8 miles



**Figure 10**



# **Southern Oregon** **Intertie Trail** **Preferred Routes**





## XII RECOMMENDED COURSE OF ACTION

The recommended course of action for the various agencies and administrative units to follow upon approval of this assessment includes:

<u>Action</u>	<u>Date to be completed</u>
1. Identify the level of resource management activities and land allocations that effect the preferred route in each of the agencies land management planning efforts. Each agency will consider a range of land allocations and resource management activities adjacent to the trail during their land management planning process.	10/86
2. Prepare the Comprehensive Management Plan. The plan will consider, at a minimum, the following:	
A. The level of trail development as it pertains to the land allocations identified in the land management plans, and the preferred trail management strategy in this assessment.	1/88
B. Total Development Costs	
C. Planned Acquisition of Rights-of-Way	
D. Schedule of Trail Development	
E. Projected maintenance dollars	



### XIII CONSULTATION WITH OTHERS

Jack Remington, Coordinator, Oregon Recreation Trails Advisory Council,  
Department of Transportation, Parks and Recreation Division, 525 Trade Street  
SE., Salem, Oregon, 97310

Larry Cash, Vice President, Pacific Crest Trail Conference, P.O. Box 1907,  
Santa Anna, California, 97202

Jeannette Fitzwilliams, Past President, National Trails Council, 13 West Maple  
Street, Alexandria, Virginia, 22301

Russell Pengelly, President, Desert Trail Association, P.O. Box 611, Burns,  
Oregon 97720

Doris Johnson, President, Sierra Club, Klamath Falls Chapter, 1946 Manzanita,  
Klamath Falls, Oregon 97601

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APPENDIX 1  
LANDSCAPE EVALUATION  
CRITERIA



# LANDSCAPE EVALUATION CRITERIA FOR THE HARNEY BASIN

## PHYSIOGRAPHIC PROVINCE

	Landform	Vegetation	Waterform	Rockform
Distinctive	Highly varied terrain with steep slopes or sharp relief	Highly varied vegetative patterns, unique groups of species such as alpine or hardwoods with visually attractive forms, isolated tree patches in open areas & marsh or meadow areas.	Lakes, reservoirs, or marshes with outstanding shoreline configuration or reflects major features or surrounded by outstanding vegetative or rockforms.	Numerous large or significant rockforms such as cliffs, peaks, freestanding formations, ridges, gorges or exposed lava flows.
A	Major peaks and major cinder cones			
	Minor cones or buttes of unique form or color		Rivers or streams with large volume of flow or outstanding flow characteristics or shorelines.	Features become dominant in the landscape because of size, color, or configuration.
	Major canyons and gorges			
Common	Moderately varied terrain dominated by massive, rounded forms with moderately steep slopes.	Moderately varied vegetative pattern with combinations of natural openings & tree masses that are co-dominant.	Moderately significant water features such as small lakes, ponds, or marshes small streams or minor springs.	Moderately important geological features such as minor cliffs, ridges or partially vegetated lava flows that are obvious but do not dominate in the landscape.
B	Minor peaks, canyons, and cinder cones	Pine & juniper associations are typical.	Co-dominant features in the landscape.	
	Major ridges			
Minimal	Flat or gently rolling terrain with low slope gradients, no distinctive character.	Uniform vegetative pattern with little color or texture variation.	Intermittent streams, seeps, ponds, etc., with essentially no distinctive characteristics or no water features.	Minor or no rockforms such as boulders, small outcrops or completed vegetated and weathered lava flows.
C	Uniformity of terrain with subtle edge definitions.	Sagebrush flats are typical.	Subordinate features in the landscape.	



# LANDSCAPE EVALUATION CRITERIA FOR THE BASIN AND RANGE PHYSIOGRAPHIC PROVINCE

	Landform	Vegetation	Waterform	Rockform
<b>Distinctive</b>	Combination of landforms develop dramatic patterns and contrast. Escarpments in juxtaposition with flat basins. Canyons or gorges with vertical or near vertical walls. Highly dissected hill & valley relief, bold shoulders cut by deep ravines	Many separately identifiable vegetation types form a rich pattern composition Moist riparian forest to flat open meadow and sage. Striking clusters of vegetation in seasonal color or bloom. Distinctive vegetation features; e.g., aspen groves, park-like of mature old-growth stands of ponderosa pine, gnarled snags.	Distinctive waterscapes characterized by a rich combination of flow, size, and appearance differences: Contrasts in prominence of water; i.e., narrow stream widens into lake, lake changes to wide stream meanders. Large expanse of water surface present. Striking appearance by virtue of clarity or color.	Massive, bold, and/or abrupt rock forms usually of large scale having distinctive features in harmonious contrast with encompassing landform.
<b>Common</b>	Adjacent & opposing landforms create moderate contrast in scale: Moderately dissected hill and valley relief	Vegetation patterns moderately defined and characterized by: Transitions between vegetation types only moderately apparent. Seasonal color apparent but does not create distinctive patterns or features.	Water moderately conspicuous in characteristic landscape. Continuous type of movement with moderate contrast; i.e., water expression common to character type.	Forms of moderate scale lacking distinctive features.
<b>Minimal</b>	Adjacent & opposing landforms are indistinct with no apparent contrast in scale: Low, inconspicuous land forms compose terrain pattern. Monotonous repetition of landform; e.g., continuous flat plains & low hills creating subtle transition in relief.	Vegetation patterns weakly defined or not apparent from either consistent cover or contrasting expression: Monotonous repetition of vegetation type; e.g., continuous sage or conifer cover.	Water inconspicuous or ephemeral due to seasonal or vegetational obscuration: Surface area of water insignificant in relation to characteristic landscape.	Ambiguous features only minimally apparent.



# LANDSCAPE EVALUATION CRITERIA FOR THE RECENT (HIGH) CASCADES PHYSIOGRAPHIC PROVINCE

	Landform	Vegetation	Waterform	Rockform
<b>Distinctive</b>	Peaks rising 5,000 ft. & more over surrounding landform with 60% or greater slopes.	High degree of pattern due to frequent meadows, & alpine & subalpine species on high ridges. Natural openings created by contrasting vegetation or lack of vegetation.	Major drainage rivers or large streams with numerous or unusual flow patterns.	Features include recent volcanoes, volcanic plugs & lava flows, as well as talus slopes, pinacles & cliffs.
<b>A</b>	Volcanic peaks vary from 7,000' to 14,000' + elevation.	Includes distinctive stands of old-growth timber.	Higher waterfalls or cascades of 10' to 200' height.	These features stand out as primary focal elements in the landform because of size, color, or configuration.
	Well-defined ridges connecting major peaks.		Large lakes or medium lakes with outstanding shoreline configurations or rock & vegetation reflect major landform features.	
	Deep glaciated canyons.			
<b>Common</b>	Gently sloping to rolling terrain with long slopes of 20 to 60%.	Continuous cover with few natural openings to break the canopy.	Streams or creeks with common flow characteristics.	Frequent exposed edge of lava flows, surface rock outcrops & large boulders.
<b>B</b>	Minor glaciated valleys.	Low species diversity generally mixed conifer, ponderosa & lodgepole pine.	Small lakes with some shoreline irregularity or minor feature reflections.	These features are obvious, but not striking in the landscape.
	Ridges exhibit minor dominance over landform.			
	Frequent peaks, buttes, & cones rise 500' to 2500' above surrounding landscape.			
<b>Minimal</b>	Flat to gently sloping landform with 0 to 20% slopes.	These features are small or vegetative covered and not obvious.	Water inconspicuous or not present.	Areas of bare flat slopes with small outcroppings or pumice areas.
<b>C</b>	No dominant features.	Little species diversity such as stands of lodgepole pine or hemlock on flats.	Intermittent creeks or perennial streams with little flow & little variation.	

APPENDIX 2  
DESCRIPTION OF ALTERNATIVE  
ROUTE SEGMENTS



## ROUTE DESCRIPTION

A. Route Segments. Eighteen route segments have been identified for the proposed Trail (Figures 1-17). These routes were identified by the interdisciplinary team using the criteria described in Section IX.

B. Description of Route Segments. The following factors are used to describe the segments:

1. Physiography. Provides a general description of the trail segment in terms of elevations and surface water.
2. Visual Quality. Identifies the level of visual quality associated with the route (see Appendix A for criteria used in assessing visual quality).
3. Development. Identifies how much of the route follows existing trails or roads, whether potable water is available, if it passes through developed recreation sites (campgrounds, picnic areas) or rural agricultural areas, and to what extent the route is undeveloped.
4. Land Ownership. Identifies, in miles, the land ownership associated with the route, i.e., Forest Service Bureau of Land Management (BLM), U.S. Fish and Wildlife Service, State, County, and private lands.
5. Special Uses. Identifies metallic minerals (gold, silver, etc.), nonmetallic minerals (pumice, crushed rock sources, etc.) and energy resources (geothermal, natural gas, oil) associated with the route. (Commercial livestock grazing is widely dispersed across the proposed route(s), and, therefore, will not be described further under the route segments.)
6. Special Area Classifications. Identifies whether the route passes through designated backcountry areas, wildlife management areas, etc.
7. Recreation Opportunity Spectrum Setting (ROS). Identifies the current ROS physical setting(s) the route traverses (see Section 1, Table 1 for ROS physical setting criteria).
8. Historical/Cultural Significance. Identifies historical and cultural interpretive opportunities associated with the route.
9. Wildlife. Identifies if threatened or endangered species (Endangered Species Act 1973, Oregon Endangered Species Task Force 1974) are known to occur along the route. Significant wildlife and fish habitat are also identified.
10. Vegetation. Identifies general plant communities including sensitive plant species that are known to occur along the route, and commercial Forest lands.



## B. Description of Route Segments.

### SEGMENT 1: Ranger Spring (Pacific Crest Intertie) to Antler Spring, 78.4 miles (Figures 1-3).

Physiography. Elevations range from 8,100 feet at Yamsey Mountain to 4,100 feet along Wood River. Approximately 60 miles of the route is located on flat to gently rolling terrain. Numerous fresh water springs and perennial streams occur along this route.

Visual Quality. Approximately 26 miles of route passes through distinctive landscapes, 40.4 miles in common, and 12 miles in minimal (Lillienthal 1982). Distinctive features associated with the route are the Klamath Marsh, Williamson River, Jackson Creek, and Ranger Spring.

Development. Of the total 78.4 miles, approximately 6.9 miles of the route follows existing Forest Service, State, or County roads. 11.6 miles are on existing trails and 45.3 miles of the route is undeveloped. Potable water is available at five Forest Service developed campgrounds.

Approximately 10.1 miles of the route traverses agriculturally developed land.

Land Ownership. Approximately 71.2 miles are located on the Winema National Forest, 2.2 miles on the Fremont National Forest, 1.0 mile on State Highway 62, and 4.0 miles on County Road 1419 (Klamath County Land Status Maps).

Special Uses. No known metallic minerals exist along the route (Chemult Planning Unit Final Environmental Statement 1977). Several nonmetallic mineral sites are adjacent to the route. The potential for geothermal, oil, and gas development is not positively known because no test wells have been drilled (Chemult Planning Unit Final Environmental Statement 1977).

Special Area Classifications. Approximately 2.5 miles of the route are located in the Sky Lakes Roadless Area, a RARE II Further Planning Study Area. Another 9.1 miles are located in the Yamsay Mountain-Buck Creek Dispersed Recreation Area, an area allocated to backcountry recreation, where intensive Forest management practices are prohibited (Chemult Planning Unit Final Environmental Statement 1977).

ROS Setting. Approximately 9.0 miles are located within ROS, Semiprimitive Nonmotorized (SPNM), 60.9 miles in Roaded Natural, and 8.5 miles in Rural (Sarff 1983).

Historical and Cultural Interpretive Sites. Potential interpretive historical sites associated with the route include Yamsay Mountain. Klamath Indian legends connect the mountain to ancient Indian lore. They claim the mountain is the legendary home of the North Wind, which in Klamath language is "Yamash." When he came to Earth for visits, Yamash stayed at the mountain, which is the place where storms originated. The mountain is considered sacred by the Klamath Tribe. In fact, some Klamath Indians still perform vision quest ceremonies in the area.

Other areas of cultural resource significance are Wocus Butte and Williamson River. Rock cairns and remnants of house pits have been found in these areas.



Wildlife. The bald eagle is the only threatened species known to inhabit a portion of this route. A bald eagle management area has been designated for the Wocus Butte area with restrictions on management and recreation use activities from January 1 through March (Winema NF 1980).

Klamath Marsh provides outstanding waterfowl habitat and is heavily used during the migratory waterfowl season. Portions of the marsh have been designated as a refuge (Klamath Forest Wildlife Refuge).

Fish habitat associated with the trail includes Sevenmile Creek, the Williamson River, and Jackson Creek.

Vegetation. The route traverses two general vegetative types, lodgepole pine and ponderosa pine. Various plant communities are associated with these types. Approximately 58.8 miles of the route passes through the pine associated plant community types and 15.6 miles through lodgepole types. Numerous wet and dry stringer meadows, some bordered by extensive groves of aspen, are interspersed within these two plant communities (Volland, 1976). Approximately 74.4 miles of the route traverses commercial Forest land.

Sensitive plant species are not known to occur along the route.

SEGMENT 2: Miller Lake (Pacific Crest Intertie) to Jackson Creek,  
45.5 Miles (Figures 4-6 )

Physiography. The proposed route traverses north and south across the dry, pumice flats located at the north Winema National Forest. Surface water is limited to several springs and small perennial streams. Elevations range from 4600 to 6400 feet.

Visual Quality. Approximately four miles traverses distinctive landscapes, 10.7 miles common and 34.8 miles of minimal. Distinctive features associated with the route included Miller Lake and Miller Creek.

Existing Development. Approximately 4.2 miles of this route follows an existing trail. The remainder of the route (41.3 miles) are undeveloped. This route is dissected by numerous road crossings which are used primarily for intensive Forest management.

A Forest Service developed campground is located on the western end of the route at Miller Lake. Potable water is available at the site.

Land Ownership. The entire route traverses Winema National Forest lands except at Federal, State, and County road crossings.

Special Uses. Portions of the route have been or are currently under mineral, gas, and oil leases. The potential for mineral/energy development is not known.

No nonmetallic mineral sites are located along the route.



Special Area Classifications. Approximately 3.4 miles of the route are located in the Windigo-Thielsen Roadless Area. This area was given, "Further Planning" status in the RARE II process. Further Planning as defined in RARE II means that a roadless area will be considered for wilderness in the Forest Planning Process.

ROS Setting. Nearly three miles of the route are located in Semiprimitive Nonmotorized. The remaining 42.5 is located in Roaded-Natural.

Historical and Cultural Interpretive Opportunities. The route crosses the Old Klamath Trail, which was developed into a major wagon route during the 1870's, and the Oregon Central Military Wagon Road (1864), an important route connecting central Oregon to the Willamette Valley.

Wildlife. Threatened or endangered species are not known to occur along this route.

Streams and lakes large enough to support fish include Miller Creek and Miller Lake.

Vegetation. Approximately 30.1 miles of the route traverses dry lodgepole pine plant community types, 11.3 miles of wet lodgepole pine, and 4.1 miles of nonforest community types. Approximately 41.4 miles of the route traverses commercial forest land.

SEGMENT 3. Antler Spring to Dead Indian Mountain: 41.2 miles (Figures 7-8)

Physiography. Elevations range from 7600 feet at Antler Spring to 4900 at Silver Creek. The terrain varies from mountainous to basalt canyons and ravines to flat valley bottomlands. The route follows and traverses several perennial streams and springs.

Visual Quality. Nearly 5.2 miles of the route traverses distinctive landscape, 20.8 miles traverses common, and 15 miles traverses minimal. Distinctive features include North Fork Silver Creek, a narrow basalt gorge, and Hagar Mountain. The lookout affords outstanding panoramic views of the high desert country to the north and east, timbered country to the south, and the Cascade Range to the west.

Existing Developments. Of the total 41.2 miles, approximately 39 miles are undeveloped and 2.2 miles follows existing trail. The route is dissected by numerous Forest Service roads.

Potable water is available at Silver Creek Marsh Campground, a Forest Service developed recreation site.

This route traverses areas of intensive forest management.

Land Ownership. Approximately 1.6 miles of this route are located on private land. The remainder is on Fremont National Forest.

Special Uses. Portions of this route have been or are currently under geothermal, gas, and oil leases. Extensive exploratory drilling has occurred over much of the area. However, no productive wells have been located, and the potential development of these energy resources remains speculative.



Metallic minerals are not known to occur along this route. Nonmetallic rock sources are present, but not developed. Sites more accessible have been or are currently being utilized, primarily for road surfacing.

Special Areas. Four miles of this route are located in the Antler Roadless Area. According to the RARE II study (1978) the area was not considered for wilderness classification.

ROS Setting. About four miles of the route are in Semiprimitive Nonmotorized, 0.5 mile in Semiprimitive Motorized, 8.5 miles in Roaded-Natural, and 28.7 Roaded-Modified ROS settings.

Historical and Cultural Interpretive Sites. No existing or potential interpretive opportunities occur along the route. The significance of Dead Indian Mountain is not known.

Wildlife. Threatened or endangered species are not known to occur along this route (Silovsky et al. 1981).

Fish habitat is minimal and occurs only along the North Fork of Silver Creek.

Vegetation. The route traverses three general vegetative associations, ponderosa pine, pine associated, and lodgepole. Approximately 19 miles passes through ponderosa pine, 7.6 miles through pine associated, and 7.0 miles through lodgepole vegetative communities. The remaining 7.4 miles passes through wet and dry meadows, and scab rock flats. Sensitive or endangered plant species are not known to occur along the route. Approximately 33 miles of the route traverses commercial forest land.

#### SEGMENT 4: Antler Spring to North Winter Ridge 42.9 Miles (Figures 7-8)

Physiography. Portions of this route follows the North Fork of Silver Creek and Ducau Creek located in the Silver Lake Ranger District. Elevations range from 7600 to 4900. The route ascends Foster Butte, a rhyolite dome.

Visual Quality. Approximately 9.2 miles traverse distinctive landscapes, 20.7 miles are common, and 10.1 miles are minimal. Distinctive features include West Fork of Silver Creek, Alder Spring, and Thompson Reservoir.

Existing Development. Approximately 2.5 miles of this route follows existing roads. The remainder of the route, 24 miles, is undeveloped. This route is dissected by numerous road crossings which are used primarily for intensive Forest management.

Two Forest Service developed campgrounds are located midway along the route at Thompson Reservoir. Potable water is available at both sites.

Land Ownership. Approximately 1.6 miles of the route crosses over private land. The rest of the route (41.3 miles) is located on Fremont National Forest.

Special Uses. No mineral/energy leases, metallic or nonmetallic sites occur along this route.



Special Area Classifications. Approximately three miles of this route are in the Buck Creek Roadless Area. Based upon the RARE II study this area was not considered for Wilderness Classification. The route also traverses the southeastern boundary of the Thompson Reservoir Eagle Management Area (Silovsky 1981).

ROS Setting. Nearly 2.5 miles are located within Semiprimitive Nonmotorized, 0.5 mile in Semiprimitive Motorized, 11.8 miles in Roaded-Natural, and 29.6 in Roaded Modified.

Historical and Cultural Interpretive Opportunities. Cultural/historical interpretive opportunities are not known to occur along this route.

Wildlife. Thompson Reservoir has been identified as an Eagle Management Area and is actively used for nesting and wintering. The area also receives seasonal use by pronghorn antelope (Hayes 1980).

Fish occur in the West Fork of Silver Creek and Thompson Reservoir.

Vegetation. Approximately 19.9 miles pass through ponderosa pine plant communities, 4.0 miles through pine associated, 14.4 miles through lodgepole pine, and 4.7 miles through wet and dry meadows and scab rock flats. Sensitive or endangered plant species are not known to occur along the route. (Riker et al. 1980) Approximately 38.3 miles of the route traverses commercial forest land.

#### SEGMENT 5 Antler Spring to Fremont Point, 36.2 Miles (Figures 7-8)

Physiography. Elevations range 7600 feet at Antler Spring to 4958 at Thompson Reservoir. Several perennial streams and springs occur along this route. The route ascends two rhyolite domes, Sycan Butte and Pole Butte in the Silver Lake Ranger District.

Visual Quality. Approximately 6.3 miles traverse distinctive landscapes, 18.5 miles are common, and 11.5 miles are minimal.

Development. Approximately 11.5 miles of this route follow existing roads. The remaining 24.7 miles are undeveloped. This route is dissected by numerous road crossings, which are used primarily for intensive forest management.

Two Forest Service developed campgrounds are located midway along the route at Thompson Reservoir. Potable water is available at both sites.

Land Ownership. Approximately 0.3 miles of the route cross over private lands. The remaining 36 miles are located on Fremont National Forest.

#### Special Uses.

Special Area Classifications. The route traverses the eastern perimeter of the Thompson Reservoir Bald Eagle Management Area.

ROS Setting. Approximately 0.5 miles of the route are located within Semiprimitive Motorized, 16.8 miles in Roaded-Natural, and 19.3 miles in Roaded Modified.



Historical and Cultural Interpretive Opportunities. Winter Rim was named by John C. Fremont during his 1843 expedition to discover the mythical San Buenaventura a "great river" which supposedly flowed the southwest interior of the U.S. discharging somewhere along the west coast. Below is an excerpt from his diary:

"Towards noon the Forest looked clear ahead, appearing suddenly to terminate; and beyond a certain point we could see no trees. Riding rapidly ahead to this spot, we found ourselves on the verge of a vertical and rocky wall of the mountain. At our feet - more than a thousand feet below - we looked into a green prairie country, in which a beautiful lake some twenty miles in length, was spread along the foot of the mountains, its shores bordered with green grass. Just then the sun broke out among the clouds, and illuminated the country below, while around us the storm raged fiercely. Not a particle of ice was to be seen on the lake, or snow on its borders, and all was like summer or spring. The glow of the sun in the valley below brightened up our hearts with sudden pleasure; and we made the woods ring with joyful shouts to those behind; and gradually, as each came up he stopped to enjoy the unexpected scene. Shivering on snow three feet deep, and suffering in a cold north wind, we exclaimed at once that the names of Summer Lake and Winter Ridge should be applied to these two proximate places of such sudden and violent contrast." (From the Expeditions of John Charles Fremont, volume 1 Travels from 1838 to 1844.)

Fremont was guided by the well known explorer and trapper, Kit Carson.

Wildlife. Approximately 3.4 miles of the route follow the perimeter of the Thompson Reservoir Bald Eagle Management Area (Silovsky 1981). The site is actively used for nesting and wintering. Foster Lake has been identified as an area on the Fremont National Forest that is used by pronghorn antelope (Hayes 1980).

Fish occur in Thompson Reservoir which is annually stocked by the Oregon Department of Fish and Wildlife. Guyer Creek provides limited fish habitat.

Vegetation. The route passes through 17.3 miles of ponderosa pine plant community types, 3.4 miles of pine associated, 4.4 miles of lodgepole, and 11.1 miles of nonforest. Sensitive or endangered plant species are not known to occur along the route (Riker et al. 1980). Approximately 25.1 miles of the route traverses commercial Forest land.

#### SEGMENT 6: Picture Rock Pass to Counts Ranch, 61.2 Miles (Figures 8-11)

Physiography. The route follows two major ridges on the Fremont National Forest, and traverses one major stream course. Elevations range from 5,000 feet at the Chewaucan River to 7,400 feet at Round Pass Mountain. The terrain varies from flat valley bottomland to steep broken ridges.



Visual Quality. The route traverses 49.1 miles of distinctive landscapes, 6.8 miles of common, and 5.3 miles of minimal. Distinctive features include Winter Rim, Chewaucan River Valley, and Brattain Buttes Range. Both Winter Rim and Brattain Buttes afford spectacular vistas.

Surface water is scarce along Winter Ridge and Brattain Butte Range. The longest distance between surface water is about 25 miles.

Existing Development. Approximately 13.8 miles of the route follow existing trails. The remainder of the route, 47.4 miles, are undeveloped. Portions of the route are dissected by roads.

Two Forest Service fire lookouts and a visual facility are located along this route. There are no developed recreation facilities.

Land Ownership. Approximately 3.5 miles of the route are on private land, 3.2 miles on Bureau of Land Management, and 54.5 miles on Fremont National Forest.

Special Uses. Portions of the route have been or are currently under mineral, gas, and oil leases. Many of these leases have terminated and the potential for development remains speculative.

Metallic mineral claims exist in the Brattain Buttes Range. Some mineral extraction on a small scale has occurred in the past. Further development of these minerals is speculative. No nonmetallic sites have been developed along the route. The risk of impact to the trail resulting from energy or mineral development is low (QuerIn 1984).

Special Area Classifications. Approximately 6.8 miles are located in the Hannon Trail Roadless Area, and 4.8 miles in the Brattain Buttes Roadless Area. Both areas were not recommended for wilderness classification (RARE II).

RQS Setting. Approximately 11.6 miles are located in Semiprimitive Nonmotorized, 35.2 miles in Semiprimitive Motorized, 10.2 miles in Roaded-Natural, and 4.2 miles in Roaded-Modified.

Historical and Cultural Interpretive Opportunities. The low ridges in the Brattain Buttes area served as major crossings for prehistoric aboriginal seasonal migration between the lower and upper Chewaucan River (Aikens et al 1979). Projectile points found in the area are of types known to have occurred throughout the past 8000 years, a time span corresponding well to that known for human occupation of the Chewaucan area (Shannon et al 1979).

Wildlife. Two potential bald eagle nesting sites have been identified above the Summer Lake Wildlife Refuge along Winter Rim (Silovsky 1981). This same area was also identified for bighorn sheep reintroduction (Silovsky 1983). Morgan Butte, in the Brattain Butte range, has been identified as an area receiving seasonal use by sage grouse (Hayes 1980). Morgan Butte, in the Brattain Butte range, has been identified as an area receiving seasonal use by sage grouse (Hayes 1980).

Vegetation. The route traverses approximately 28.2 miles of nonforest community types, 13.1 miles of ponderosa pine types, 12.1 miles of pine associated types, and 8.0 miles of lodgepole types. Sensitive or endangered plant species are not known to occur along the route (Riker et al. 1980). Approximately 33.2 miles of the route traverses commercial forest land.



**SEGMENT 7: Counts Ranch to Can Springs Via Chandler State Wayside,**  
**17.1 Miles (Figure 11)**

**Physiography.** The route traverses southeast across the headwaters of Willow Creek (elevation 5,685), this descends into the Crooked Creek Valley to Chandler State Wayside (elevation 4,500), ascends Clover Creek to the summit of Abert Rim (elevation 7,535), traverses the headwaters of Honey Creek to its terminus at Can Spring.

**Visual Quality.** The route traverses 4.6 miles of distinctive landscapes and 12.5 miles of common. Distinctive features include Abert Rim and the basalt camper containing Honey Creek.

Several springs and perennial streams occur along the route.

**Existing Development.** Approximately 5.2 miles of the route follows existing roads. The remaining 11.9 miles is undeveloped. Portions of the route are heavily dissected by roads.

The Chandler State Wayside is located along the route. This facility is used primarily by motorists traveling on Highway 395. A semiprimitive recreation site exists at Can Spring.

The route traverses approximately 1.2 miles of developed agricultural land.

**Land Ownership.** Approximately 2.8 miles of the route are located on private property. The remaining 14.3 miles are on Fremont National Forest land (Lakeview Ranger District).

**Special Uses.** There are no energy or mineral leases along this route (Querlin 1984).

**Special Area Classifications.** There are no special classified areas along the route.

**ROS Setting.** Approximately 5.3 miles are located in Roaded-Natural, 9.6 miles in Roaded-Modified, and 3.2 miles in rural.

**Historical and Cultural Interpretive Opportunities.** The route intersects with the Oregon Central Military Wagon Road which was to serve as a direct link between the mining communities of southwestern Oregon and western Idaho. In the end the road received little use and was perceived by the public as a fraud perpetrated to skim off vast tracts of land for personal gain and virtually no public benefit (Minor et al 1979).

**Wildlife.** The southern portion of the Abert Rim area receives seasonal use by pronghorn antelope (Hayes 1980). Bighorn sheep inhabit a portion of the run north of the route. Threatened and endangered wildlife species are not known to occur along this route.

**Vegetation.** Approximately 8.1 miles of the route traverse pine associated community types, 6.75 miles of ponderosa pine types, and 2.5 miles of nonforest types. Sensitive or endangered plant species are not known to occur along this route. (Riker et al. 1980) The route traverses approximately 15 miles of commercial forest land.



**SEGMENT 8: Counts Ranch to Can Spring via Loveless Creek, 19.1 Miles**  
**(Figure 11)**

**Physiography.** The route traverses southeasterly across the headwaters of Willow Creek (elevation 5,685), then descends into the Crooked Creek Valley at Wright Ranch (elevation 4,550), ascends Loveless Creek to the headwaters of Honey Creek (elevation 7,480) traverses northeasterly along Honey Creek to its terminus at Can Spring.

**Visual Quality.** The route traverses 2.2 miles of distinctive landscapes, and 16.9 miles of common. Distinctive features are a 35' waterfall on Loveless Creek and the basalt canyon enclosing Honey Creek.

Several perennial springs and streams occur along the route.

**Existing Development.** Approximately 16.3 miles of this route follow existing roads with the remaining 2.8 miles undeveloped. There are no developed recreation sites along this route.

The route traverses approximately 3.2 miles of developed agricultural land.

**Land Ownership.** Nearly 4.0 miles of the route are located on private lands, 1.3 miles on Bureau of Land Management, and the remaining 13.8 miles are on Fremont National Forest.

**Special Uses.** There are no energy or mineral leases along this segment.

**Special Area Classifications.** There are no special classified areas along the route.

**ROS Setting.** Approximately 4.7 miles are located in Roaded-Natural, 9.2 miles in Roaded-Modified, and 5.2 miles in Rural.

**Historical and Cultural Interpretive Opportunities.** (See above Segment 6.)

**Wildlife.** Threatened or endangered wildlife species are not known to occur along the route (Hayes 1980, Silovsky 1981).

**Vegetation.** Approximately 7.7 miles of the route traverse ponderosa pine community types, 8.8 miles of pine associated .5 miles of lodgepole pine, and 2.46 miles of nonforest types. Sensitive and endangered plant species are not known to occur along the route (Riker et al. 1980). The route traverses approximately 17 miles of commercial forest land.

**SEGMENT 9: Counts Ranch to Can Springs via Drake-McDowell, 29.6 miles**  
**(Figure 11)**

**Physiography.** The route traverses south along a ridge (elevation 6,500 feet) before descending down into Crooked Creek (elevation 4,700), ascends Big Cove Creek to Drake Peak (elevation 8,200 feet), traverses north along Twelve Mile, McDowell, and Crook Peaks to its terminus at Can Spring (elevation        ).



Several perennial springs and streams occur along the route.

Visual Quality. The route traverses 14.4 miles of distinctive landscapes and 15.2 miles of common. Distinctive features include Big Cove Creek, and the Drake-McDowell area.

Existing Development. Approximately 7.3 miles of the route follow existing roads with the remaining 22.3 miles undeveloped. South of Counts Ranch to Crooked Creek the area has been extensively terraced (9.5 miles of the route) to facilitate tree growth following a wildfire that burned much of the area during 196 .

Nearly three miles of the route traverse developed agricultural land.

Land Ownership. 4.2 miles of the route are located on private land. The remaining 25.4 miles are on the Fremont National Forest.

Special Uses. Approximately two miles of the route traverses lands currently under energy and mineral explorations. The risk of impact to the trail resulting from energy or mineral development is low (Querin 1984).

Special Area Classifications. Approximately 6.0 miles are located in the Drake-McDowell Roadless Area. The area has not been recommended for Wilderness Classification (RARE II 1978).

ROS Setting. Approximately 6.0 miles are located in Semiprimitive Nonmotorized, 4.3 miles in Roaded-Natural, 14.8 miles in Roaded-Modified, and 4.5 miles in Rural.

Historical and Cultural Interpretive Opportunities. (See above Segment 6.)

Wildlife. Threatened or endangered wildlife species are not known to occur along the route (Hayes 1980, Silovsky 1981).

Vegetation. The route traverses 8.1 miles of ponderosa pine plant community types, 7.9 miles of pine associated, 0.1 mile lodgepole, and 13.5 miles of nonforest types. Sensitive or endangered plant species are not known to occur along the route. The route traverses approximately 16.1 miles of commercial forest land.

#### SEGMENT 10: Can Spring to DeGarmo Canyon, 20.2 Miles (Figures 11-12)

Physiography. The route traverses northeast across the upper terrace of Warner Valley (elevation 5,200 feet), descends into the valley proper at the small community of Plush (elevation 4,488 feet), continues northeast around the north shore of Hart Lake (elevation 4,680 feet), then traverses in a northerly direction to its terminus at the base of DeGarmo Canyon.

Visual Quality. Approximately 3.2 miles traverses distinctive landscapes, 5.7 common, and 11.3 miles of minimal. Distinctive features include Hart Lake and Hart Mountain.

Development. The entire route (20.2 miles) follows existing roads. The condition of these roads varies from little gravel surfaced roads to asphalt.



The route passes through the community of Plush. The route traverses approximately 10.2 miles of agricultural developed land.

There are no developed recreation sites along this route.

Land Ownership. 3.2 miles of the route is on Fremont National Forest, the remaining 17 miles are on County Roads 3-13A and 3-13.

Special Uses. There are no energy resource or mineral leases or claims along this route.

Special Area Classifications. There are no special classified areas along the route.

ROS Setting. Approximately 12.5 miles Roaded-Natural and 7.7 miles in Rural.

Historical and Cultural Interpretive Opportunities. Fort (Camp) Warner was built during the 1860's. Intermittent battles with the Northern Paiute occurred between 1867 and 1873 (McArthur 1952). The fort was served by the Oregon Central Military Road and Warner Valley-Fort Bidwell Road.

Wildlife. Threatened or endangered species are not known to occur along the route. Antelope and sage grouse are known to occur in the sage flats west of Plush. Warner Valley provides excellent waterfowl habitat.

Vegetation. Approximately three miles of the route consist of ponderosa pine community types and the remaining 17.2 miles are nonforest sage brush community types.

SEGMENT 11: DeGarmo Canyon to Black Canyon via Hart Mountain Refuge Headquarters, 30.3 Miles (Figure 13)

Physiography. The route traverses north along the base of Hart Mountain to Campbell Lake (elevation 4,320 feet), ascends Poker Jim Ridge (elevation 5,800 feet), traverses southeasterly to the refuge headquarters (elevation 5,618 feet), turns northeasterly to Flook Lake, then turns southeasterly to Buck Canyon (elevation 5,417 feet).

Visual Quality. Approximately 5.4 miles of the route traverses distinctive landscape, 10.7 miles of common and 14.2 miles of minimal. Distinctive features include Poker Jim Ridge, Warner Lakes, and Hart Mountain. The summit of Poker Jim Ridge affords spectacular views of Warner Valley.

Development. The entire route, 30.3 miles, follows existing roads. The condition of these roads varies from maintained gravel surface to unmaintained wheel tracks (Figure ).

There are no developed recreation sites along the route. Potable water is available at the refuge headquarters.

Land Ownership. 21.8 miles of the route are located on County Road 3-13, 6.8 miles on U.S. Fish and Wildlife Service, and 1.7 miles on Bureau of Land Management.



Special Uses. There are no energy resource leases or mineral claims along the route.

Special Area Classification. Approximately 27.8 miles of the route is located in the Hart Mountain National Antelope Refuge.

ROS Setting. 26.7 miles of the route are located in Roaded-Natural. The remaining 3.6 miles are in Rural.

Historical and Cultural Interpretive Opportunities. (Significance of Poker Jim Ridge?)

Wildlife. Bighorn sheep and antelope occur on the refuge. The sheep are often seen along the west flank of Hart Mountain and Poker Jim Ridge. Threatened or endangered species are not known to occur along the route.

Vegetation. The entire route traverses nonforest sagebrush vegetation community types.

SEGMENT 12: DeGarmo Canyon to West Spring via Indian Springs, 33.1 miles (Figure 13)

Physlography. From DeGarmo Canyon (elevation 4,320 feet) the route ascends eastward along DeGarmo Canyon to the ridge (elevation 7,900 feet), descends Rock Creek to Hot Springs Campground (elevation 5,900 feet), traverses northerly around Adams Butte before heading south to Indian Springs, then traverses easterly across flat to gently rolling terrain to its terminus at Black Canyon (elevation 5,390).

Visual Quality. 12.1 miles of the route traverse distinctive landscapes, 6.4 miles of common, and 14.9 miles of minimal. Distinctive features include DeGarmo, Hart Mountain, and Hot Springs.

Development. Approximately 7.8 miles of the route are undeveloped. The remaining 25.3 miles follows primitive roads.

There is a U.S. Fish and Wildlife developed campground along the route with potable water available. The hot springs are developed for bathing.

Land Ownership. 22.6 miles of the route are located on U.S. Fish and Wildlife Service land, 4.7 miles on Bureau of Land Management, 0.8 miles on State of Oregon, and 5.0 miles on private land.

Special Uses. There are no energy resource leases or mineral claims along the route.

Special Area Classifications. 22.6 miles of the route are located on the Hart Mountain National Antelope Refuge.

ROS Setting. 6.8 miles of the route are located in Semiprimitive Nonmotorized, 23.3 miles are Semiprimitive Motorized, and 3.0 miles in Roaded-Natural.

Historical and Cultural Interpretive Opportunities. Historical/cultural interpretive opportunities have not been identified along this route.



Wildlife. (See above Segment 10.)

Vegetation. The entire route traverses nonforest vegetative community types which include alpine sagebrush, sedge-moist meadows, and big sagebrush. Sensitive plant species are not known to occur along the route.

SEGMENT 13: West Spring to Coyote Rim Well via West Gulch, 27.2 Miles  
(Figure 14)

Physiography. From West Spring (elevation 6,300 feet) the route traverses south along the west flank of Beatty Butte to West Gulch, ascends eastward along West Gulch to Road Spring (elevation 7,000 feet), descends east along East Gulch, then traverses east across the rimrock and foothills of Catlow Valley to its terminus at Coyote Rim Well (elevation 4,600 feet).

Surface water is limited to three springs. The longest distance between these springs are about 16.2 miles.

Visual Quality. Approximately 10.3 miles of the route traverse common landscape types, and 16.9 miles traverse minimal.

Development. Approximately 13.3 miles of the route follows existing primitive roads. The remaining 13.9 miles are undeveloped.

There are no developed recreation sites along this route.

Land Ownership. 26.9 miles are located on Bureau of Land Management and 0.3 miles on private land.

Special Uses. There are no energy resource leases or mineral claims along the route.

Special Area Classifications. There are no special area designations along this route.

ROS Setting. The entire route is located in Semiprimitive Motorized.

Historical and Cultural Interpretive Opportunities. Historical/cultural interpretive opportunities are not known to occur along the route.

Wildlife. There are no known threatened, endangered or special wildlife management areas along the route.

Vegetation. The entire route traverses nonforest (sagebrush) vegetation community types.

SEGMENT 14: Field Camp to East Gulch Well via Fish Fin Rim,  
13.2 Miles (Figures 14-15)



Physiography. The route traverses the northern flank of Beatty Butte along the Old Military Road (elevation 5,200 feet, then heads south across Fish Fin Rim (elevation 5,400 feet) to its terminus at East Gulch Road).

Surface water is limited to one spring, located at Field Camp.

Visual Quality. Approximately 8.3 miles of the route traverse common landscape types. The remaining 3.9 miles traverse minimal landscapes.

Development. The entire route follows existing primitive roads. There are no developed recreation sites along this route.

Land Ownership. Approximately 7.0 miles of the route are located on Bureau of Land Management, 1.1 miles on State, and 6.2 miles on private land.

Special Uses. There are no energy resource leases or mineral claims along the route.

Special Area Classifications. Approximately 5.3 miles of the route traverses the Basque Hills Wilderness Study Area (Wilderness Intensive Inventory for Oregon and Washington 1980).

ROS Setting. 5.3 miles of the route are located in Semiprimitive Nonmotorized, the remaining 7.9 miles of the route are located in Semiprimitive Motorized.

Historical and Cultural Interpretive Opportunities. Approximately 5.2 miles of the route follow the Old Military Road (see above Segment 8).

Wildlife. There are no known threatened, endangered or special wildlife management areas along the route.

Vegetation. The entire route traverses nonforest vegetation community types.

SEGMENT 15: Field Camp to Road Spring via Buena Vista Spring, 6.1 Miles  
(Figure 14)

Physiography. Elevations range 5,200 feet at Field Camp to 7,000 feet at Road Spring. The route traverses rimrock and shallow ravines.

Surface water is limited to three springs: Field Camp, Buena Vista, and Road Camp.

Visual Quality. The entire route traverses common landscape types.

Development. The entire route is located on existing primitive roads. There are no developed recreation sites along this route.

Land Ownership. Approximately 2.9 miles of the route are located on BLM land and 3.2 miles on private land.

Special Uses. There are no energy resource leases or mineral claims along the route.

Special Area Classifications. The route is not located in any special classified areas.

ROS Setting. The entire route is located within Semiprimitive Motorized.

Historical and Cultural Interpretive Opportunities. Historical/cultural interpretive opportunities are not known to occur along the route.

Wildlife. Threatened or endangered species are not known to occur along the route.

Vegetation. The entire route traverses nonforest (sagebrush, rabbitbrush, grasses) vegetation community types.



**SEGMENT 16: West Gulch to Coyote Rim Well via Surveyors Lake, 26.4 Miles  
(Figures 14-15)**

**Physiography.** Elevations vary from 4,800 at Coyote Rim Well to 6,300 along the southern flank of Mahogany Mountain. The route traverses rimrock, ravines, and gently rolling plateaus.

**Surface water** <sup>15</sup> is limited to five springs with 14.2 miles being the greatest distance between springs.

**Visual Quality.** Approximately 12.6 miles traverses common landscape types and 13.8 miles of minimal.

**Development.** Approximately 20.2 miles of the route is located on primitive roads. The remaining 6.2 miles are undeveloped.

There are no developed recreation sites along the route.

**Land Ownership.** Approximately 25.7 miles of the route are located on BLM land and .7 miles on private.

**Special Uses.** There are no energy resource leases or mineral claims along the route.

**Special Area Classifications.** The route traverses the northern perimeter of the Beatty Butte Wild Horse Management Area. Approximately 5.7 miles of the route traverse the Basque Hills Wilderness Study Area (Wilderness Intensive Inventory for Oregon and Washington 1980).

**ROS Setting.** Approximately six miles of the route are located in Semiprimitive Nonmotorized and the remaining 20.4 miles of the route is located in Semiprimitive Motorized.

**Historical and Cultural Interpretive Opportunities.** Historical/cultural Intrepretive opportunities are not known to occur along the route.

**Wildlife.** Threatened or endangered species are not known to occur along the route. Wild horses may be seen in the vicinity south and east of Mahogany Mountain.

**Vegetation.** The entire route traverses nonforest (sagebrush, rabbitbrush, grasses) vegetation community types.

**SEGMENT 17: Coyote Rim Well to Desert Trail (Fields) via Long Hollow,  
22.4 Miles (Figures 15-17)**

**Physiography.** Elevations vary from 4,150 at Fields, to 5,800 feet at the summit of Long Hollow. The route traverses Catlow Valley which is flat and contains several shallow lakebeds, and follows long Hollow Canyon.

**Visual Quality.** The route traverses 15.2 miles of common landscape types and 7.2 miles of minimal.



Surface water is present in Catlow Valley (variable) and at several springs along the route. The greatest distance between water sources is approximately 8.2 miles.

Development. The entire route is located on existing roads. The condition of these roads varies from primitive wheel tracks to County maintained routes. There are several ranch dwellings and homesteads along the route. The route ends at the small rural community of Fields.

There are no developed recreation facilities.

Land Ownership. Approximately 11.2 miles of the route are located on BLM land, 1.2 miles on State land, 8.2 miles on County, and 1.8 miles on private land.

Special Uses. There are no energy resource leases or mineral claims along this route.

Special Area Classifications. Approximately 3.2 miles of the route are located within the Basque Hills Wilderness Study Area.

ROS Setting. Approximately 3 miles of the route are located in Semiprimitive Nonmotorized, 5.3 miles of the route are located within Semiprimitive Motorized, 12.7 miles of Roaded-Natural, and 1.4 miles of Rural.

Historical and Cultural Interpretive Opportunities. Historical/cultural interpretive opportunities are not known to occur along the route.

Wildlife. Threatened or endangered species are not known to occur along the route.

Vegetation. The entire route traverses nonforest (sedges, sagebrush, rabbitbrush, grasses) vegetation community types.

SEGMENT-18: Coyote Rim Well to Desert Trail (Fields) via McDade Cashe,  
24.1 Miles (Figures 15-17)

Physiography. Elevations vary between 4,150 feet at Fields to 6,200 feet at Catlow Rim. The route traverses rimrock and steep canyons (Catlow Rim), a broad flat valley (Catlow Valley), and gently rolling plateaus.

Surface water is present at Catlow Valley (variable) and at several springs along the route. The greatest distance between water sources is 8.6 miles.

Visual Quality. The route traverses 2.8 miles of distinctive landscapes, 15.6 miles of common, and 5.7 miles of minimal.

Development. Approximately 17.2 miles of the route are located on primitive roads. The remaining 6.9 miles are undeveloped. There are several ranch dwellings along the route.

There are no developed recreation facilities.

Land Ownership. Approximately 21.5 miles of the route are located on BLM land, 1.2 miles on State, and 1.4 miles on private land.



Special Uses. There are no energy resource lease or mineral claims along this route.

Special Area Classifications. Approximately 4.7 miles of the route are located in the Basque Hills Wilderness Study Area.

ROS Setting. 16.2 miles are located in Semiprimitive Motorized, 5.3 miles in Roaded-Natural, and 2.6 miles in Rural.

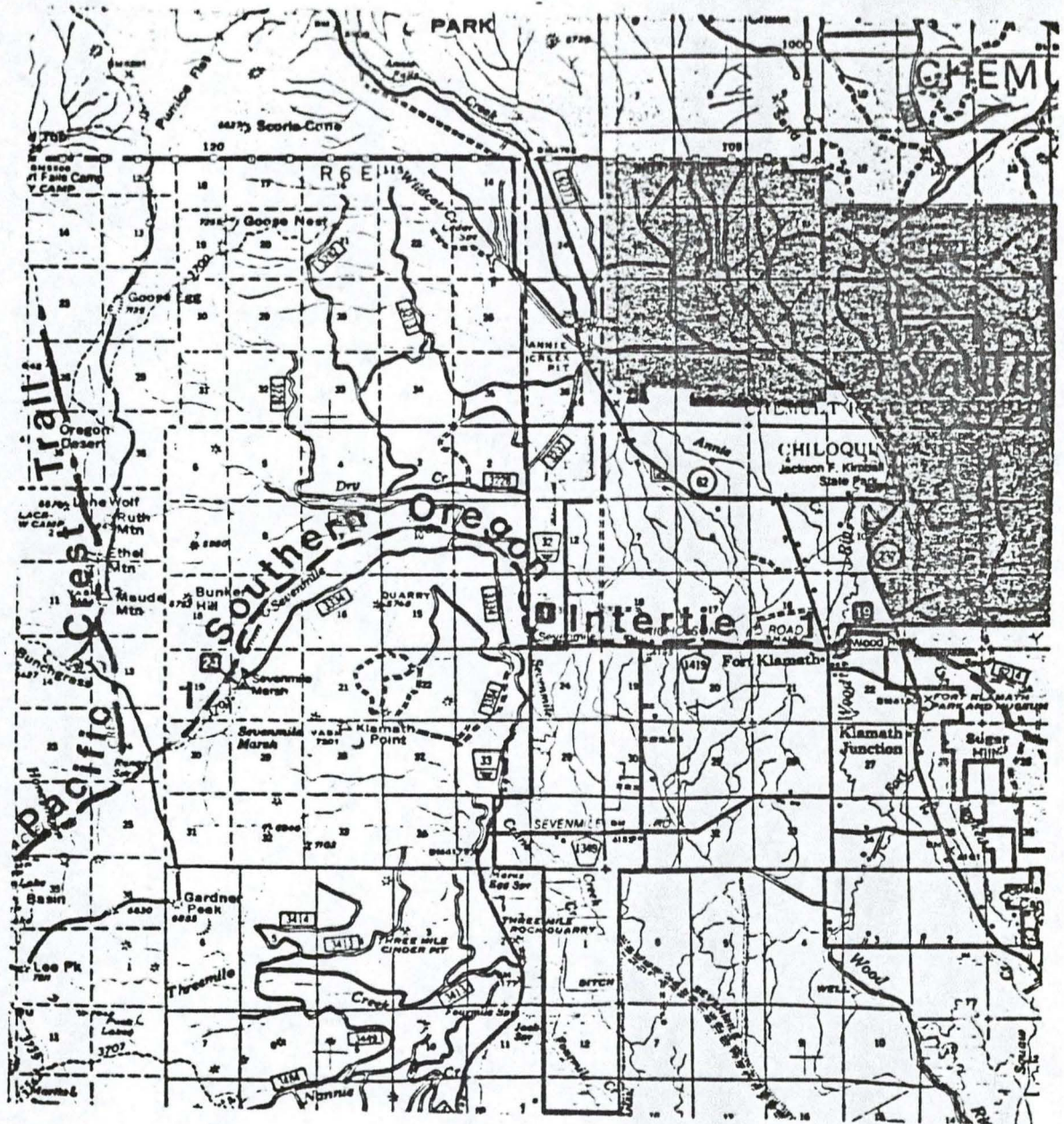
Historical and Cultural Interpretive Opportunities. Historical/cultural interpretive opportunities are not known to occur along this route.

Wildlife. Threatened or endangered species are not known to occur.

Vegetation. The entire route traverses nonforest (sedges, sagebrush, rabbitbrush, grasses) vegetative community types.



Figure 1



# Southern Oregon Intertie Trail Proposed Routes

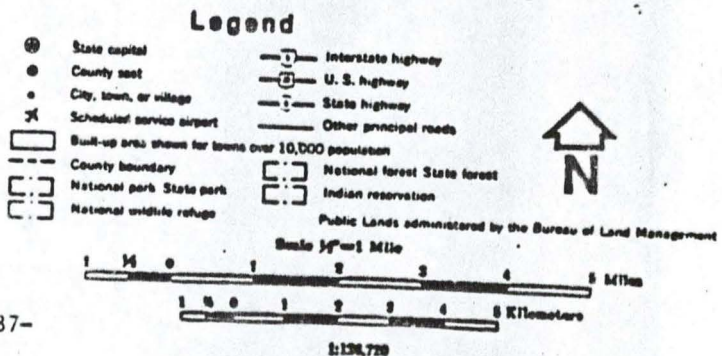
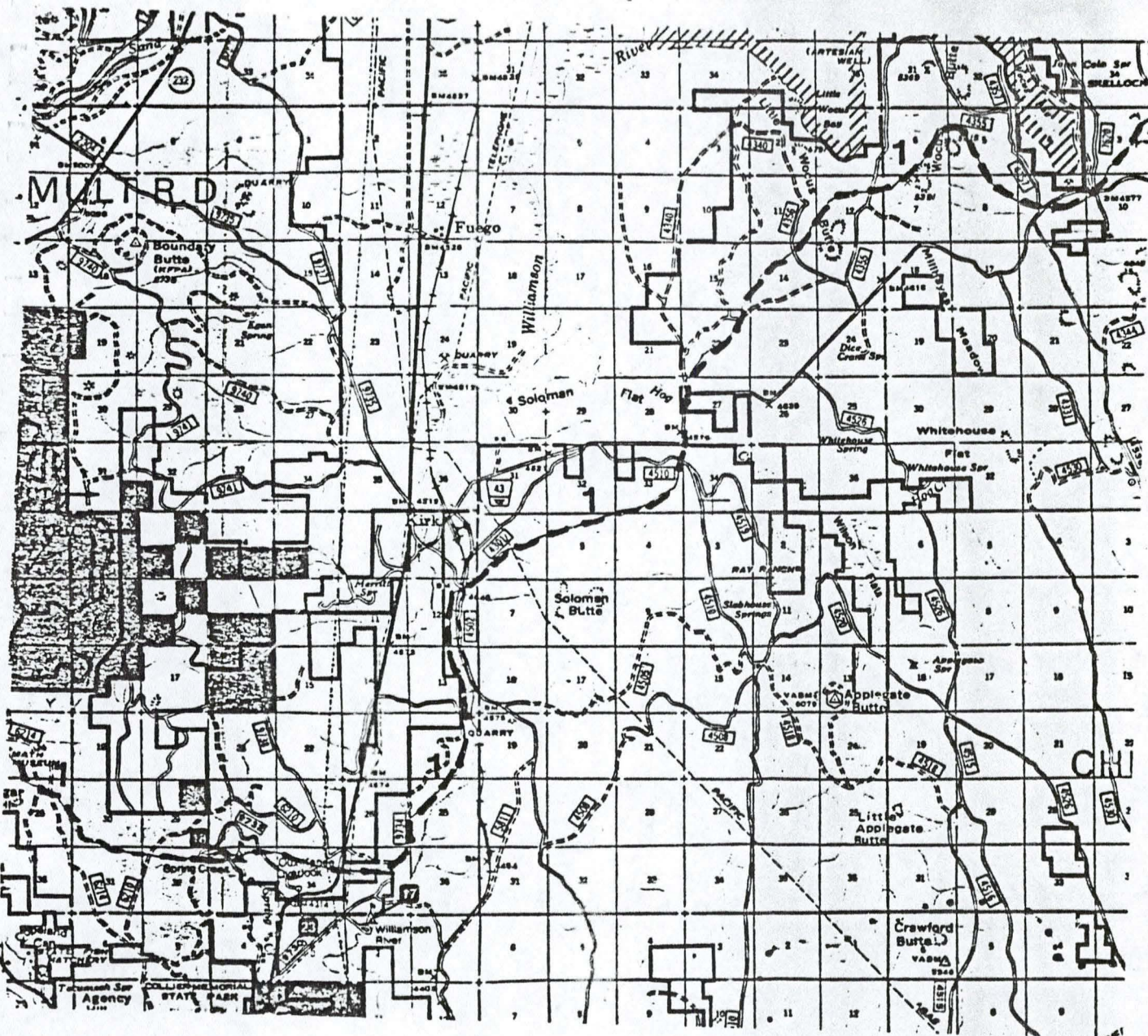




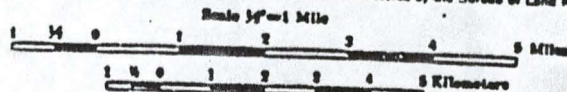
Figure 2



# Southern Oregon Intertile Trail Proposed Routes

## Legend

- State capital
- County seat
- City, town, or village
- ✕ Scheduled service airport
- ▭ Built-up area shown for towns over 10,000 population
- ▭ County boundary
- ▭ National park State park
- ▭ National wildlife refuge
- Interstate highway
- U.S. highway
- State highway
- Other principal roads
- ▭ National forest State forest
- ▭ Indian reservation
- Public Lands administered by the Bureau of Land Management





**Figure 3**



**Southern Oregon  
Intertie Trail  
Proposed Routes**

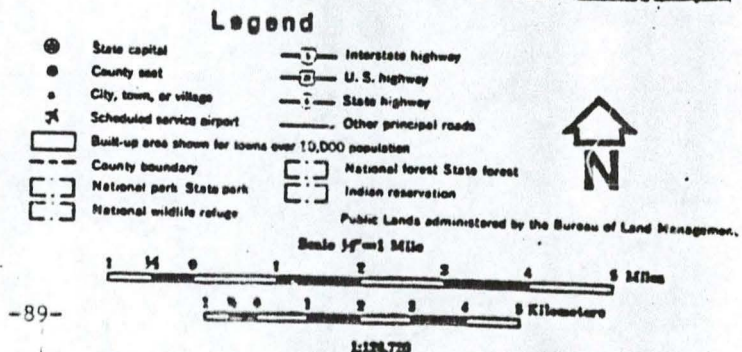
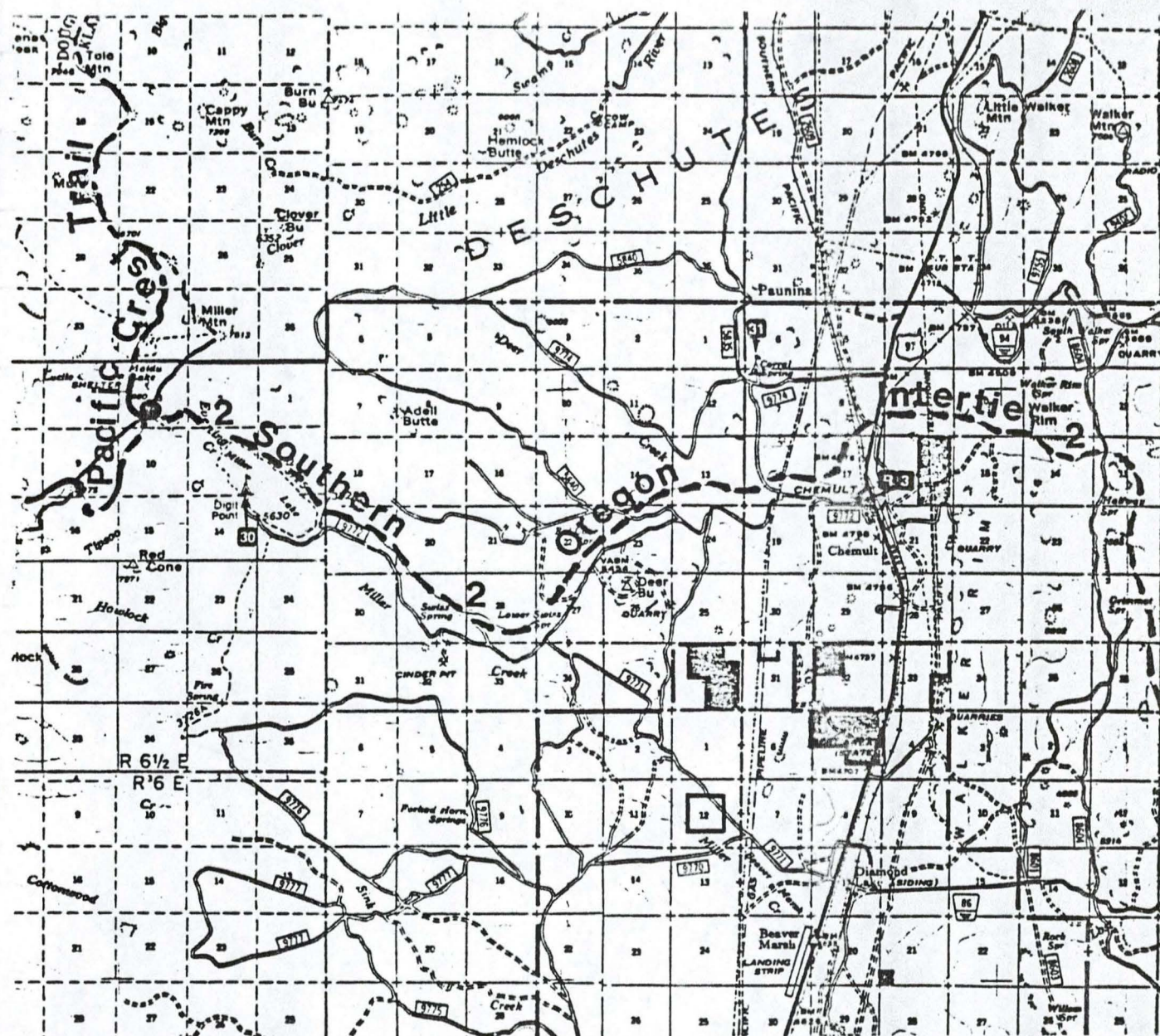


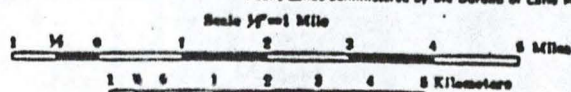


Figure 4



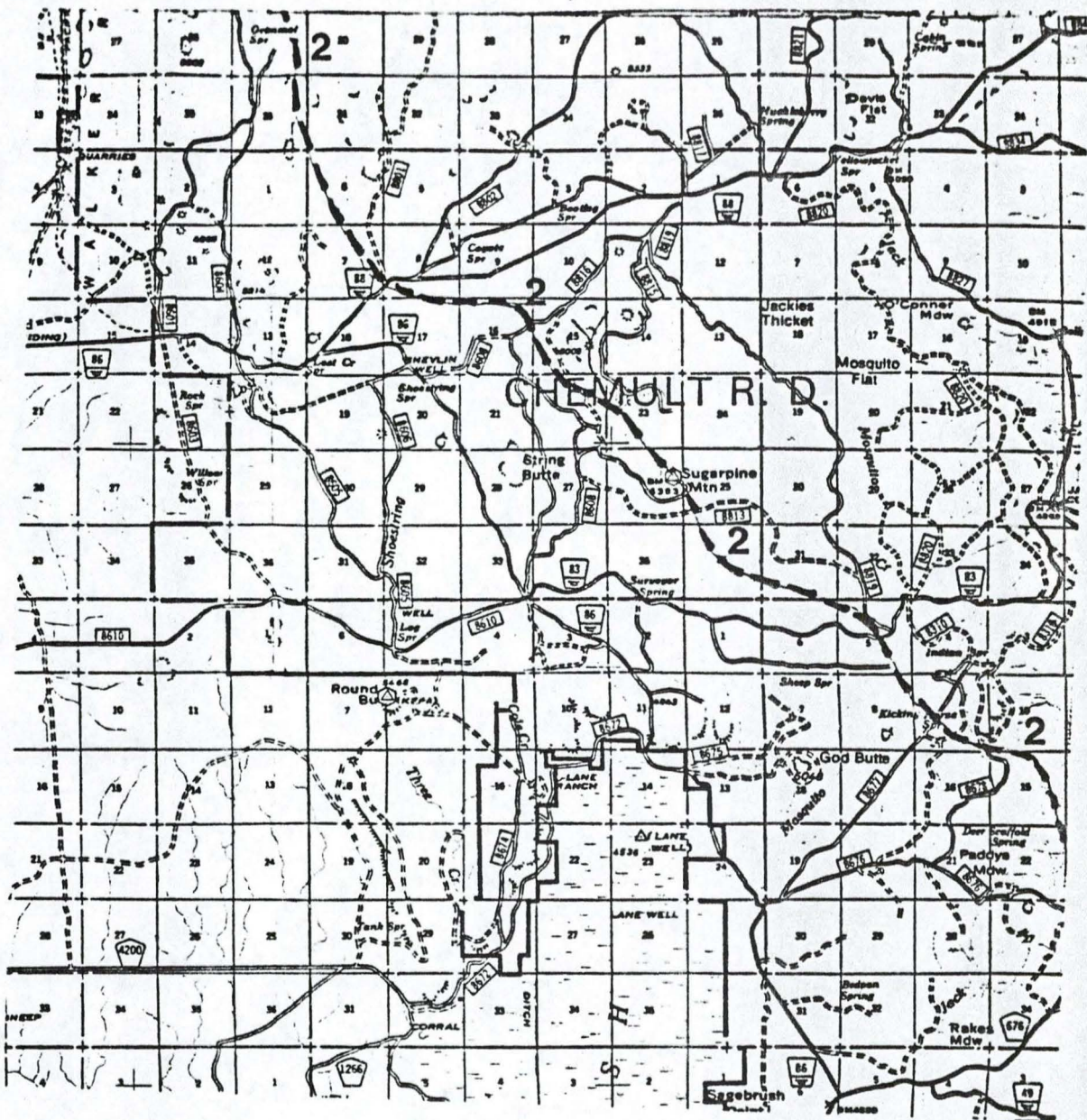
# Southern Oregon Intertie Trail Proposed Routes

- Legend**
- State capital
  - County seat
  - City, town, or village
  - ✱ Scheduled service airport
  - Built-up area shown for towns over 10,000 population
  - County boundary
  - ▨ National park State forest
  - ▨ Indian reservation
  - ▨ National wildlife refuge
  - Interstate highway
  - U. S. highway
  - State highway
  - Other principal roads
  - ▨ National forest State forest
  - ▨ Indian reservation
  - ▨ Public Lands administered by the Bureau of Land Management





**Figure 5**



# **Southern Oregon** **Intertie Trail** **Proposed Routes**

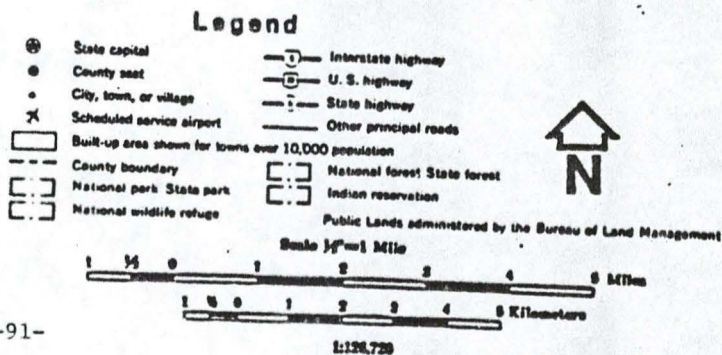




Figure 6



# Southern Oregon Intertile Trail Proposed Routes

## Legend

- State capital
- County seat
- City, town, or village
- ✱ Scheduled service airport
- ▭ Built-up area shown for towns over 10,000 population
- - - County boundary
- ▭ National park State park
- ▭ National wildlife refuge
- Interstate highway
- U. S. highway
- State highway
- Other principal roads
- ▭ National forest State forest
- ▭ Indian reservation
- Public Lands administered by the Bureau of Land Management

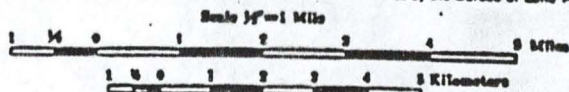
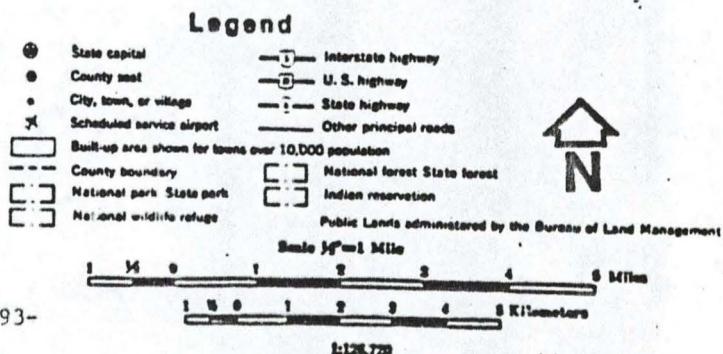




Figure 7

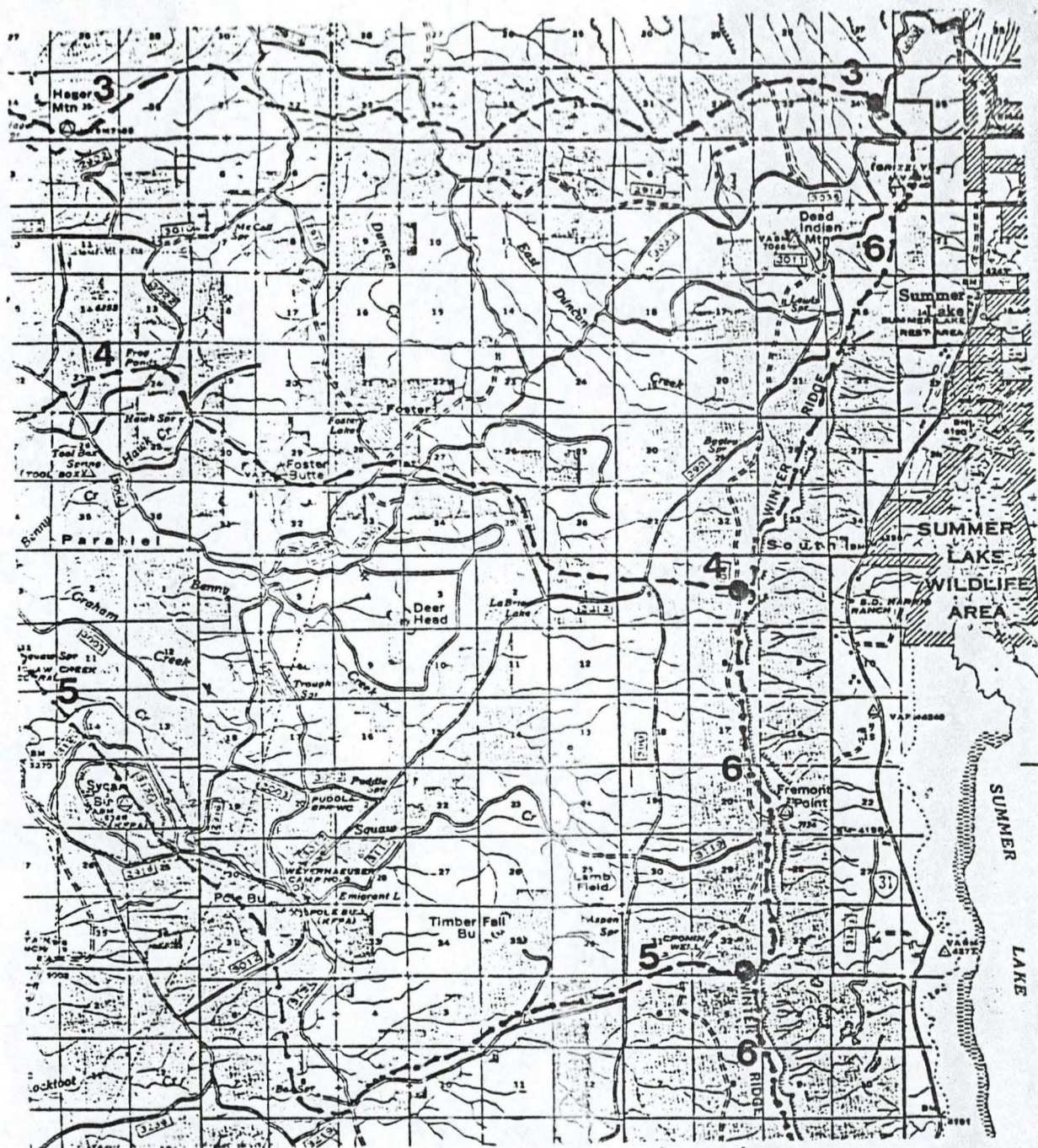


# Southern Oregon Intertie Trail Proposed Routes





# Figure 8



## Legend

- State capital
- County seat
- City, town, or village
- ✕ Scheduled service airport
- Built-up area shown for towns over 10,000 population
- - - County boundary
- ▤ National park
- ▥ State park
- ▧ National wildlife refuge
- Interstate highway
- U. S. highway
- State highway
- Other principal roads
- ▨ National forest
- ▩ State forest
- Indian reservation
- ▬ Public Lands administered by the Bureau of Land Management

**Southern Oregon**

**Intertie Trail**

**Proposed Routes**

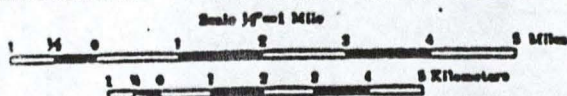
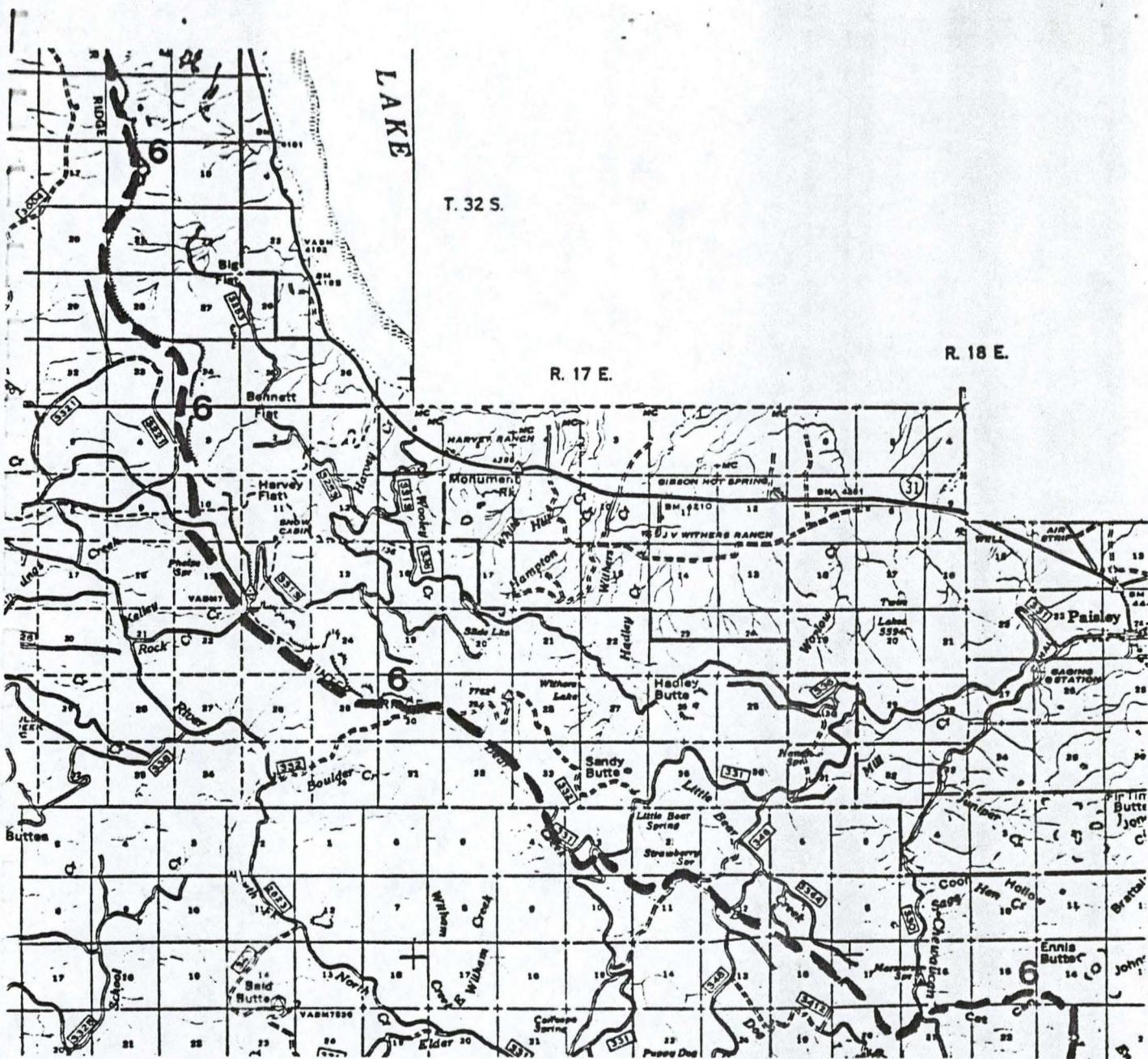
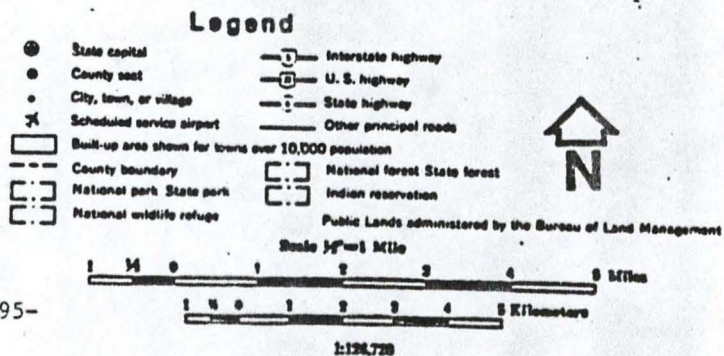




Figure 9

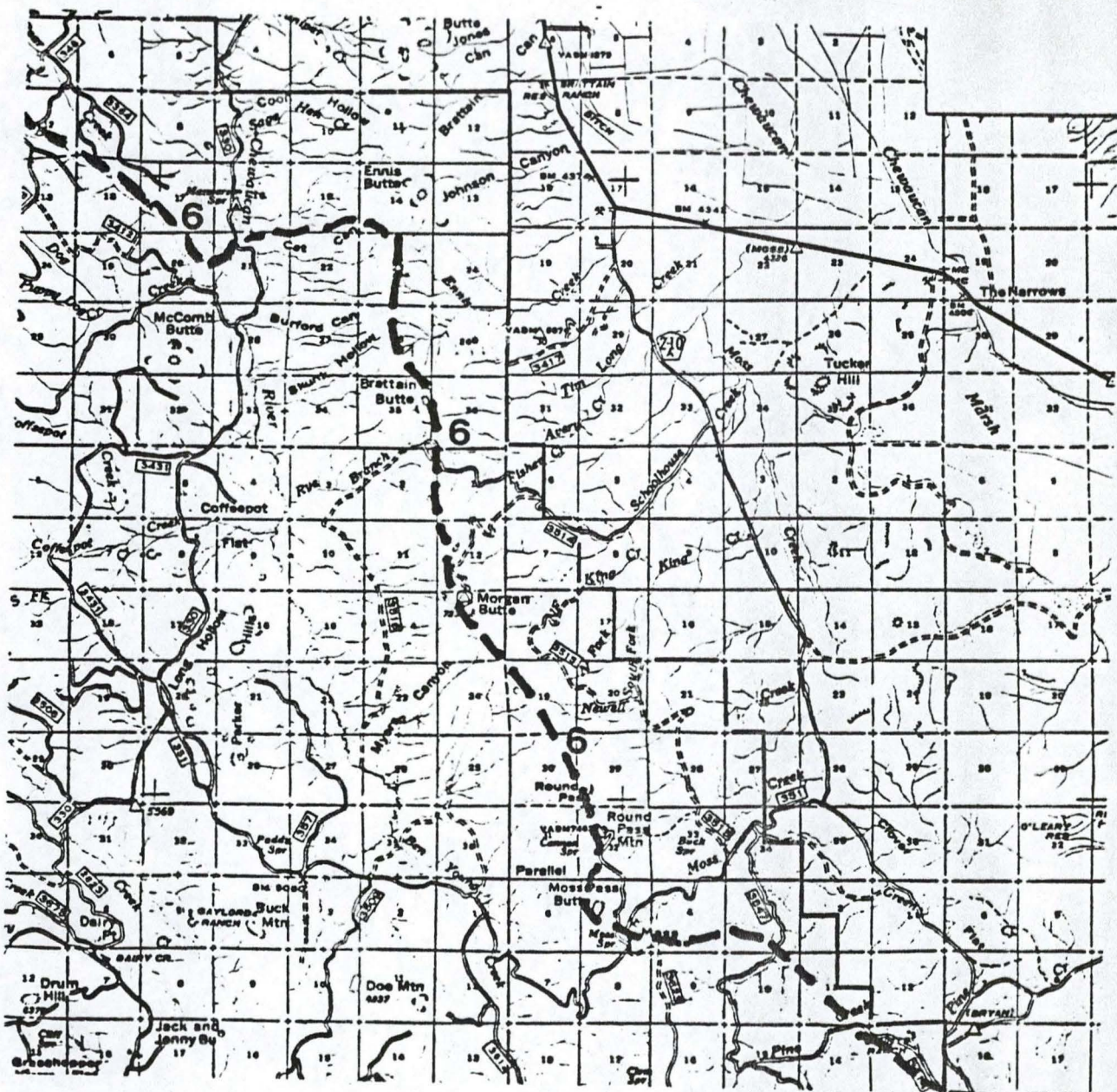


# Southern Oregon Intertie Trail Proposed Routes

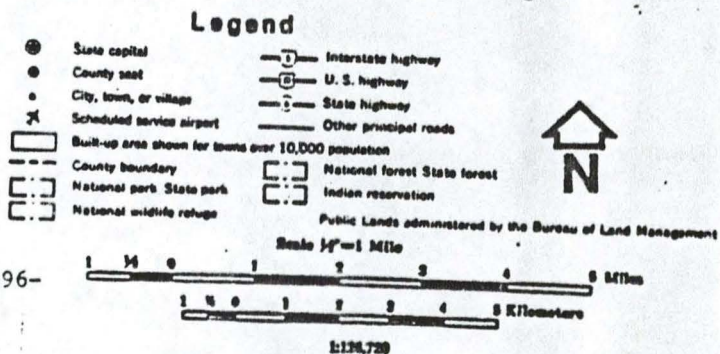




# Figure 10



## Southern Oregon Intertie Trail Proposed Routes





## Southern Oregon Intertie Trail

**Legend**

● State capital	— 1 — Interstate highway
● County seat	— 2 — U. S. highway
• City, town, or village	— 3 — State highway
✈ Scheduled service airport	— Other principal roads
Build-up area shown for towns over 10,000 population	
- - - County boundary	[ : ] National forest State forest
[ : ] National park State park	[ : ] Indian reservation
[ : ] National wildlife refuge	

Public Lands administered by the Bureau of Land Management

Scale 1/4" = 1 Mile

1 1/4 2 3 4 5 Miles

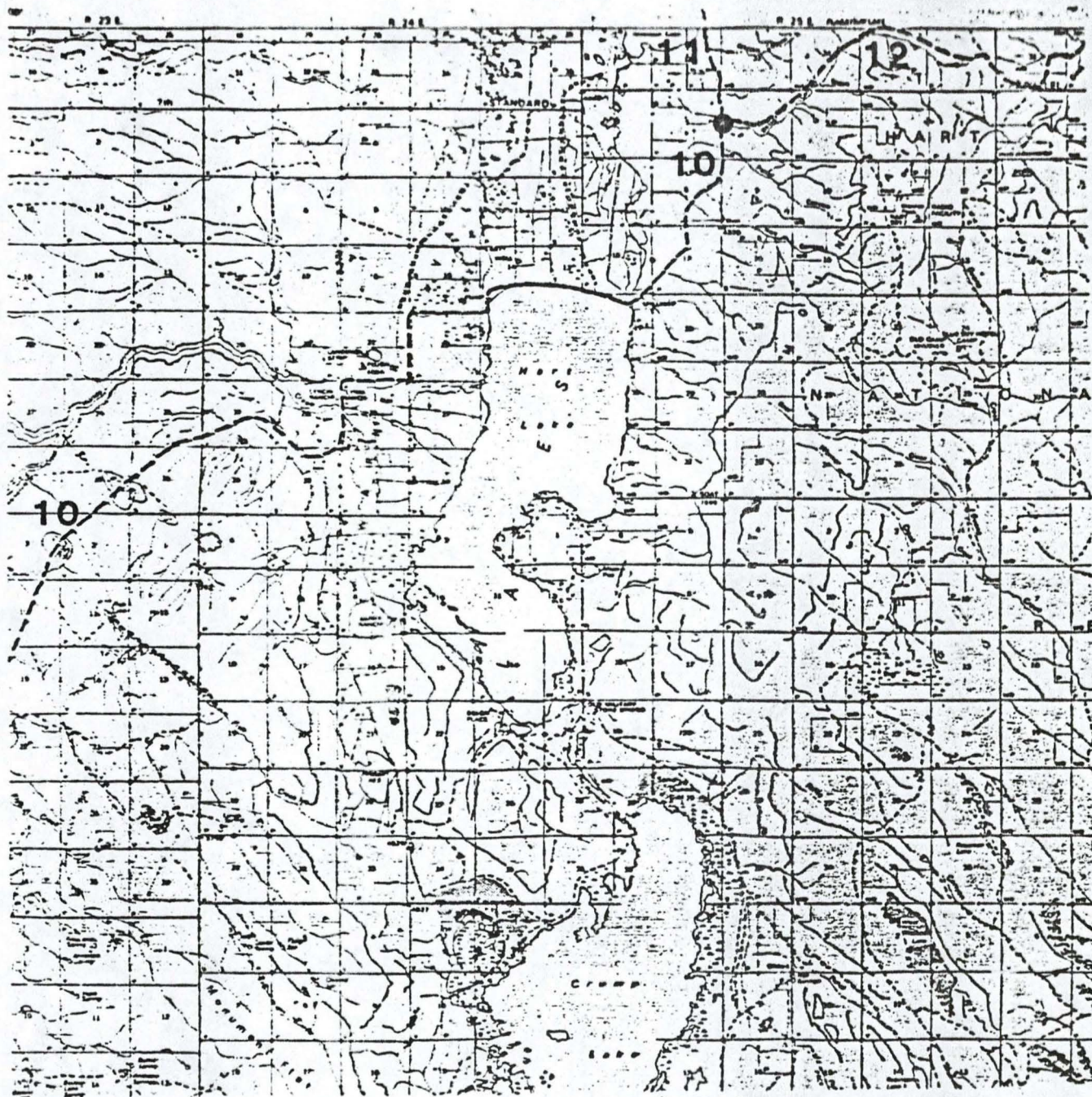
1 1/4 2 3 4 5 Kilometers

1:125,000





**Figure 12**



**Southern Oregon  
Intertie Trail  
Proposed Routes**

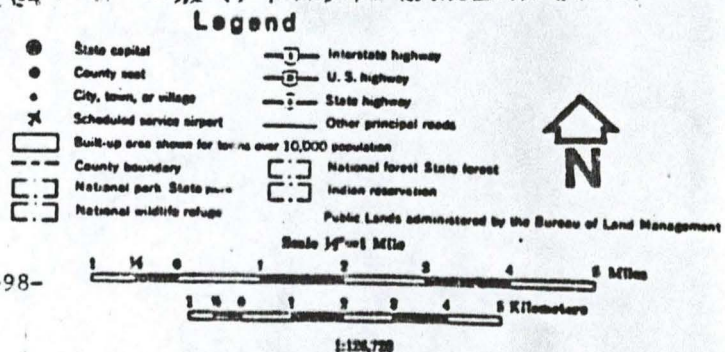
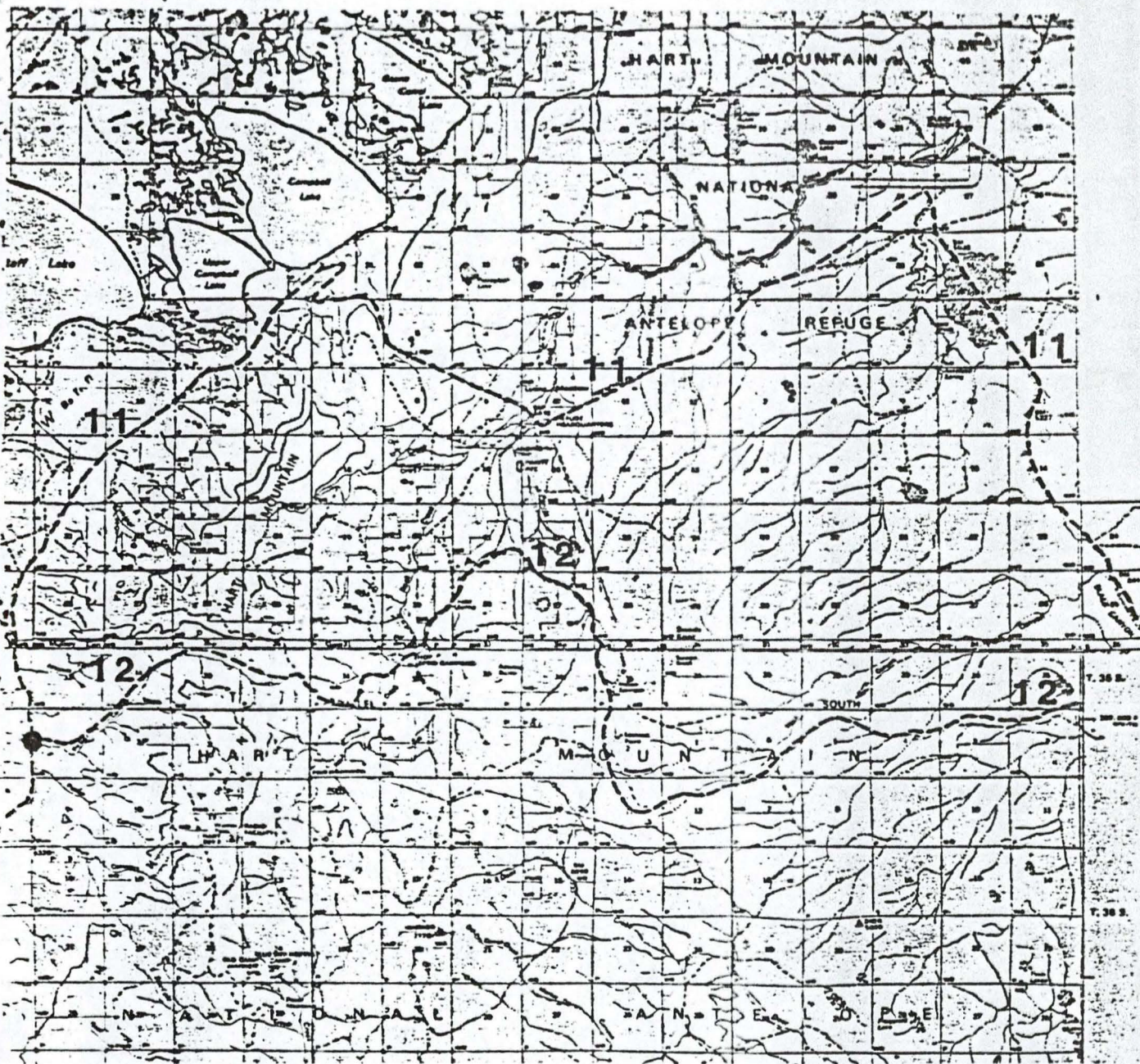
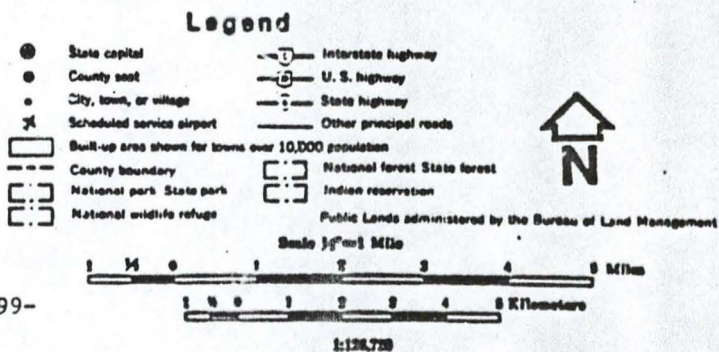




Figure 13

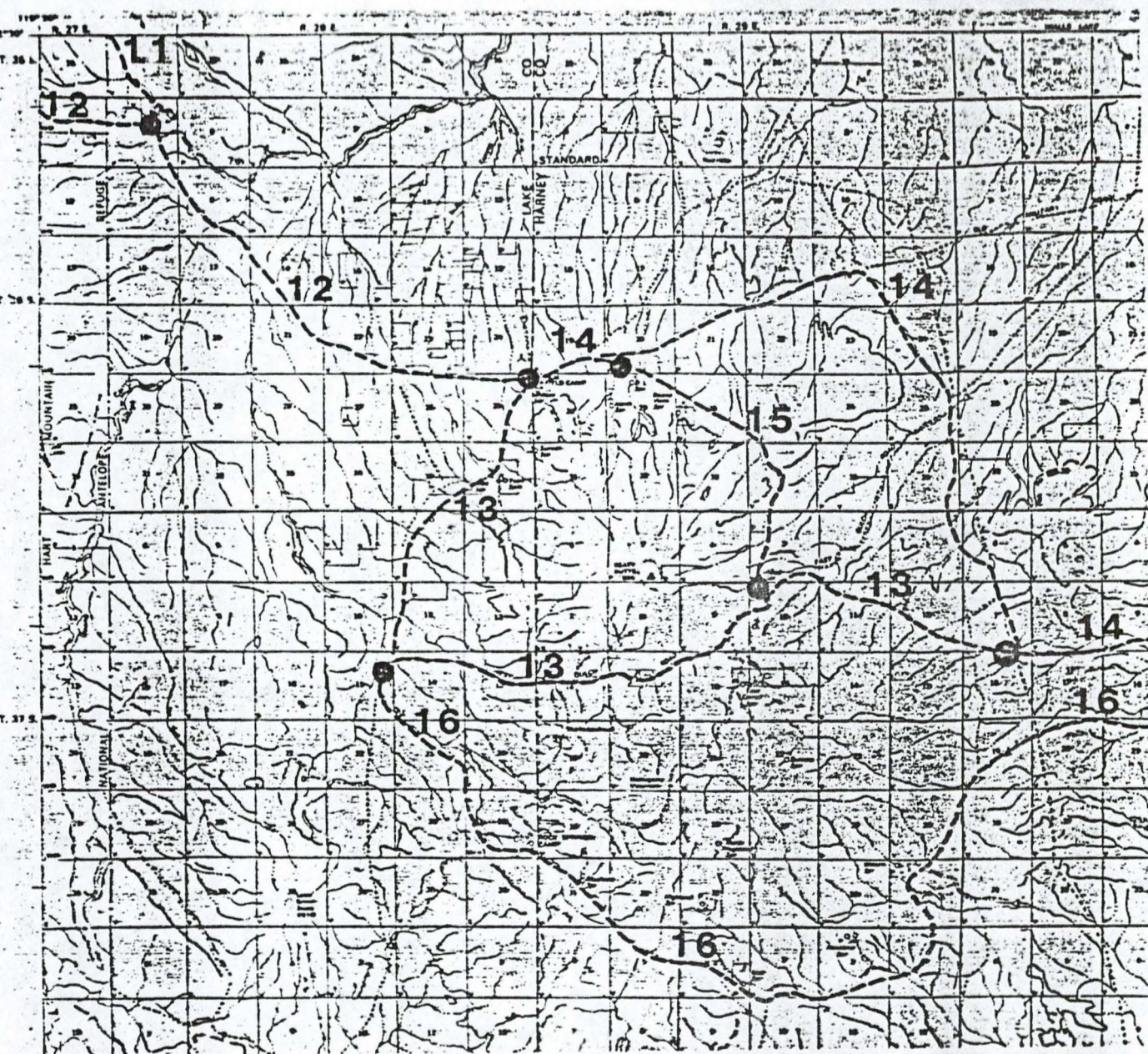


# **Southern Oregon Intertie Trail Proposed Routes**

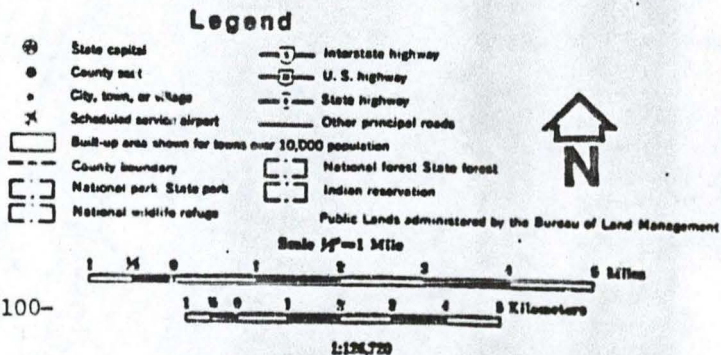




**Figure 14**

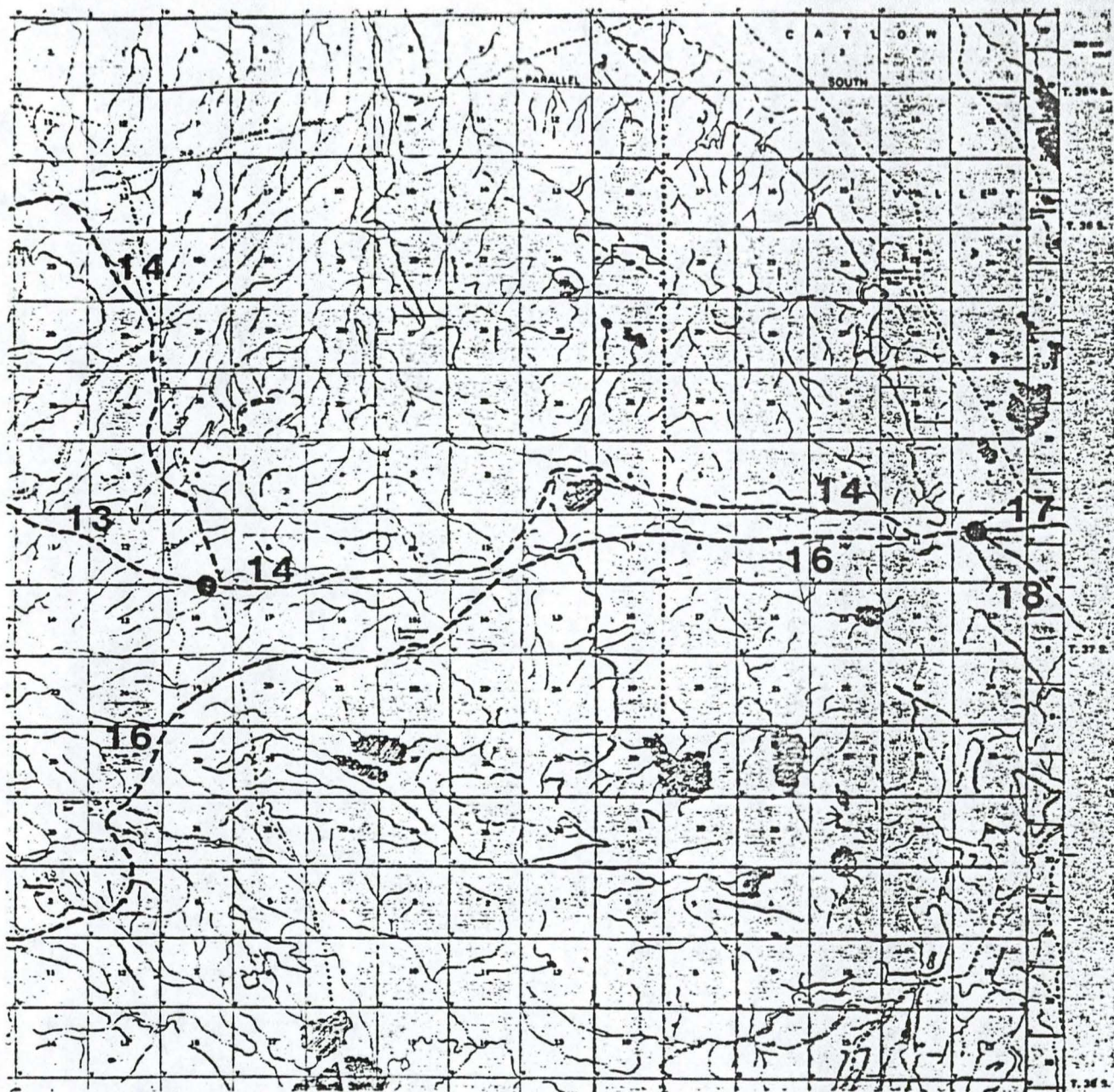


**Southern Oregon  
Intertie Trail  
Proposed Routes**





**Figure 15**



# **Southern Oregon Intertie Trail**

## **Proposed Routes**

**Legend**

● State capital	— Interstate highway
○ County seat	— U. S. highway
• City, town, or village	— State highway
✈ Scheduled service airport	— Other principal roads
▭ Built-up area shown for towns over 10,000 population	
- - - County boundary	▨ National forest State forest
▨ National park State park	▨ Indian reservation
▨ National wildlife refuge	

Public Lands administered by the Bureau of Land Management

Scale 1/4" = 1 Mile

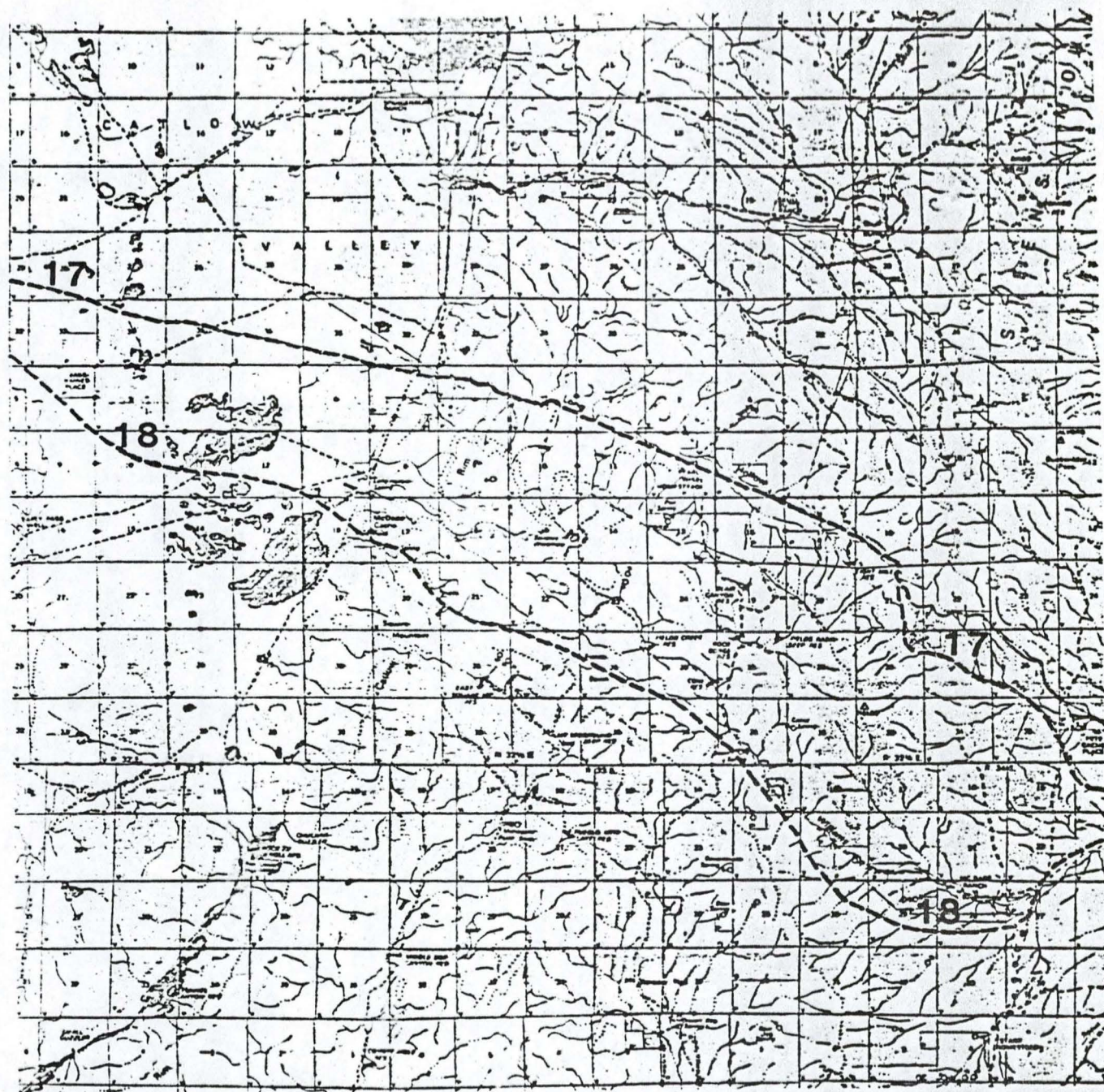
0 1 2 3 4 5 Miles

0 1 2 3 4 5 Kilometers

1:125,720



**Figure 16**



**Southern Oregon  
Intertie Trail  
Proposed Routes**

**Legend**

- |  |  |
|--|--|
| ● State capital  | — Interstate highway                                       |
| ● County seat  | — U. S. highway  |
| ● City, town, or village                               | — State highway  |
| ✈ Scheduled service airport                            | — Other principal roads                                    |
| □ Built-up area shown for towns over 10,000 population | ▨ National forest State forest                             |
| --- County boundary                                    | ▨ Indian reservation                                       |
| ▨ National park State park                             | Public Lands administered by the Bureau of Land Management |
| ▨ National wildlife refuge                             |  |



Scale 1/4" = 1 Mile

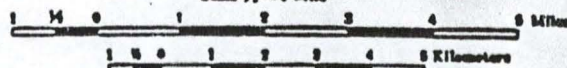
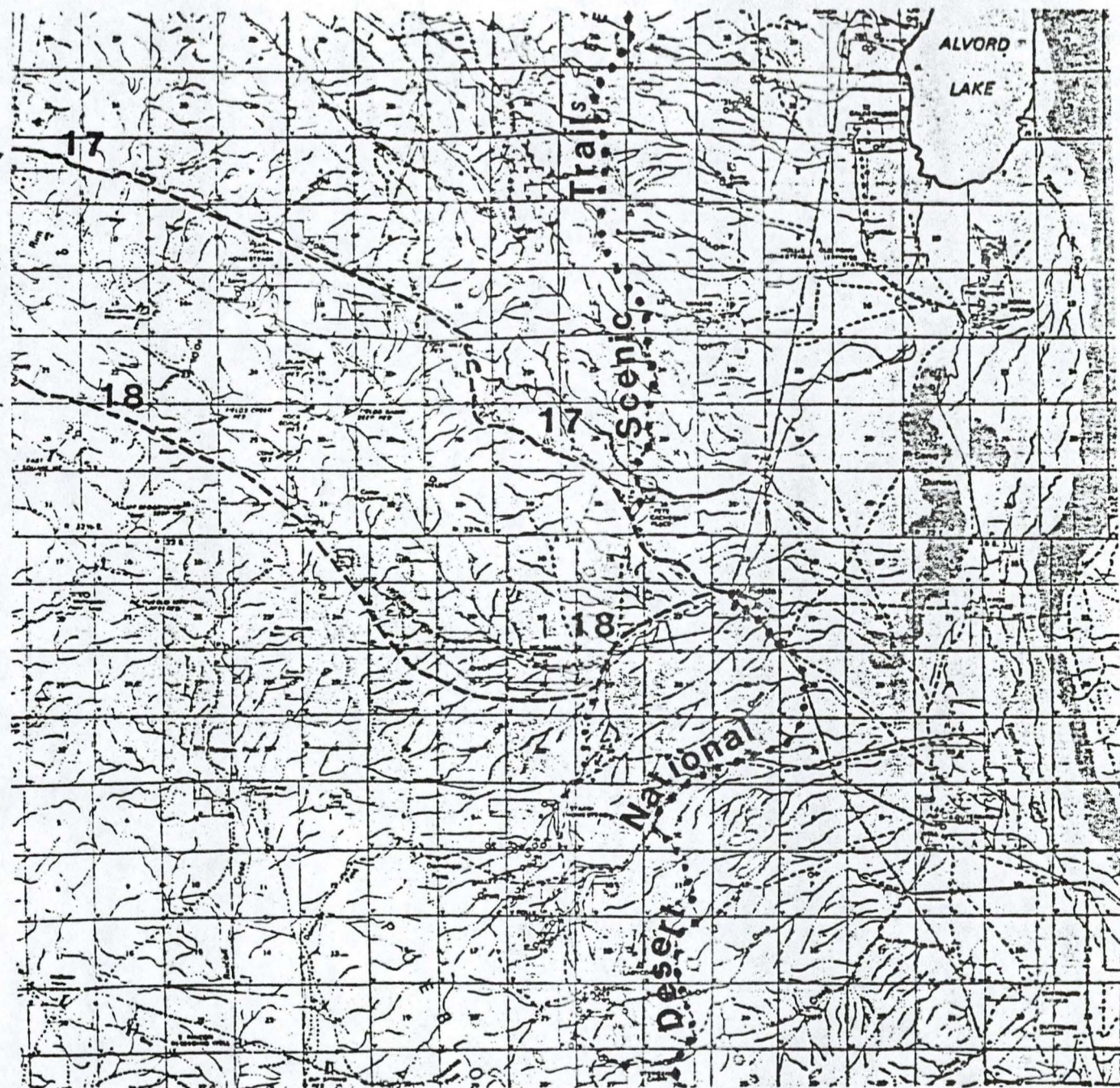


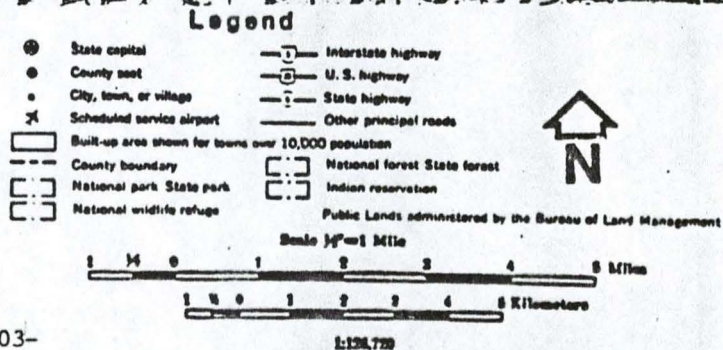


Figure 17



## Southern Oregon Intertie Trail

## Proposed Routes





APPENDIX 3

TRAIL RECREATION CARRYING CAPACITY  
by ALTERNATIVE



# Trail Capacity Estimates by Alternative

Alternative	$\frac{pI}{st}$	$\frac{1}{st}$ = PAOT TRAIL	$\frac{2}{st}$ PAOT Days	$\frac{3}{st}$ PU	$\frac{4}{st}$ LOS	$\frac{5}{st}$ RVD's
1. No Action		--	--	--	--	--
2. Most Difficult	$\frac{6 \times 315}{2 \times 4}$	= 236.25	28,350	.43	3.9	3,962
3. More Difficult	$\frac{8 \times 315}{2 \times 2}$	= 630	75,600	"	"	10,565
4. Difficult	$\frac{12 \times 315}{2 \times 1}$	= 1,890	226,800	"	"	31,695
5. Easy	$\frac{16 \times 315}{2 \times 0.75}$	= 3,360	403,200	"	"	56,347
6. Most Difficult - Easy	$\frac{10 \times 315}{2 \times 1.9}$	= 829	99,473	"	"	13,901

1/ Trail Capacity:  $\frac{pI}{st}$  = PAOT/Trail

Where: p = number of people per party  
 T = length of trail in miles  
 s = hiking speed in miles per hour  
 t = time between encounters in hours  
 st = distance between encounters in miles  
 2st = distance between parties in each direction  
 $\frac{I}{2st}$  = number of parties on trail in each direction  
 $\frac{I}{st}$  = number of parties on trail in both directions

2/ People at one time days (PAOT Days): Determined by multiplying people at one time (PAOT) by the season of use (SU). SU is 120 days.

3/ Pattern of Use (PU): Weekend to Weekday. (1:5 or 0.43 based upon RIM (Fremont and Winema NFS) and PU adjustment factors (ROS Users Guide 1982)

4/ Length of Stay (LOS): Length of stay in hours. LOS derived from Recreation Activity Duration Factors for Computing Activity Occasions on National Forest Lands and Waters (USDA Forest Service 1980).

5/ Recreation Visitor Days (RVD's): See below for calculating RVD's.

$$RVD = \frac{PAOT\ Days \times PU \times LOS}{12}$$

Where: PAOT Days = People at one time days

PU = Pattern of Use (Weekend to Weekday)

LOS = Length of stay in hours

12 = Constant (one recreation visitor day = 12 hours)



#### APPENDIX 4

##### Cost Analysis for Planning, Developing, Operating and Maintaining Each Alternative



natives	Elements of Trail Costs									
	Trail Planning involves the preparation and review of project environmental analysis reports, resource inventories and surveys, trail design and implementation plans.		Trail Preconstruction involves route reconnaissance, reconnaissance, location/survey, selection, and field review.		Trail Construction (see alternative description)		Annual Operation and Maintenance (see alternative description)		Annual Program Support: includes clerical and administrative services indirectly associated to the trail program. Does not include support costs associated with trail preconstruction and construction.	
	Cost/Trail Mile	Total Cost	Cost/Trail Mile	Total Cost	Cost/Trail Mile	Total Cost	Cost/Trail Mile	Total Cost	Cost/Trail Mile	Total Cost
	0	0	0	0	0	0	0	0	0	0
Most Difficult led to approximately 15 trailhead face for 10 vehicles including e markers (signs, cairns, etc.), eveloped trail tread except to gradation conflicts, and to erty. Maintenance between levels I Trailways Handbook. Managerial and enforced to manage use at or	\$ 40.	12,600.	75.	23,625.	\$ 650.	204,750.	25.	7,875.	\$ 7.	2,325.
Difficult udes approximately 20 trailheads e markers; limited trail tread devel- route markers are determined unsatis- use. Trail maintenance at level I-II ways Handbook (involves clearing of of debris, etc.). (See alt. 2 for use)	\$ 40.	12,600.	200.	63,000.	\$2,250.	708,750.	75.	23,625.	\$ 10.	3,315.
Difficult udes 20-25 trailheads. A continuous established for user convenience. ce at level III per Region Six Travel- ive educational and interpretive sign- r. for managerial controls on use)	\$ 95.	30,000.	400.	126,000.	\$3,300.	1,102,500.	130.	40,950.	\$ 20.	6,300.
y udes 25 to 30 trailheads (gravel and nthus trail tread will be established Clearing for overlooks, vistas, rest d. Trail maintenance will be at level tion and interpretive opportunities	\$ 150.	47,250.	575.	181,125.	\$6,250.	1,853,750.	180.	56,700.	\$ 35.	11,025.
y udes approximately 25 trailheads. all will range from most difficult to vels will vary from I-III. Educational ing is commensurate with level of trail or this alternative are determined by alternatives 2-5. (See alt. 2 for manager-	\$ 81.	25,515.	312.	98,280.	\$2,912.	917,280.	10.	31,500.	\$ 18.	5,670.

based upon USDA Forest Service Region Six Forest Development Trails,  
nt Costs and Methods, Guides for Cost Estimating, 1982



Alternatives	Elements of Trail Costs					
	<u>Trail Planning</u> involves the preparation and review of project environmental analysis reports, resource inventories and surveys, trail design and implementation plans.		<u>Trail Preconstruction</u> involves route reconnaissance, reconnaissance, location/survey, selection and field review.		<u>Trail Construction</u> (see alternative description)	
	Cost/Trail Mile	Total Cost	Cost/Trail Mile	Total Cost	Cost/Trail Mile	Total Cost
1. No Action	0	0	0	0	0	0
2. Minimum Development - Most Difficult Trail development limited to approximately 15 trailhead facilities (gravel surface for 10 vehicles including stock facilities) route markers (signs, calms, etc.), maps/brochures. No developed trail tread except to alleviate resource degradation, conflicts, and to provide for public safety. Maintenance between levels I and II per Region Six Trailways Handbook. Managerial controls implemented and enforced to manage use at or below design capacity.	\$ 40.	12,600.	75.	23,625.	\$ 650.	204,750.
3. Low Development - More Difficult Trail development includes approximately 20 trailheads (gravel surface) route markers; limited trail tread development in areas where route markers are determined unsatisfactory for directive use. Trail maintenance at level I-II per Region Six Trailways Handbook (involves clearing of downed timber, removal of debris, etc.). (See alt. 2 for management controls on use)	\$ 40.	12,600.	200.	63,000.	\$2,250.	708,750.
4. Moderate Development - Difficult Trail development includes 20-25 trailheads. A continuous trail tread will be established for user convenience. Annual trail maintenance at level III per Region Six Trailways Handbook. Extensive educational and interpretive signing provided. (See alt. for managerial controls on use)	\$ 95.	30,000.	400.	126,000.	\$3,500.	1,102,500.
5. High Development - Easy Trail development includes 25 to 30 trailheads (gravel and paved surface). A continuous trail tread will be established for user convenience. Clearing for overlooks, vistas, rest stops will be provided. Trail maintenance will be at level III or higher. Education and interpretive opportunities will be maximized.	\$ 150.	47,250.	575.	181,125.	\$6,250.	1,653,750.
6. Most Difficult to Easy Trail development includes approximately 25 trailheads. Development of the trail will range from most difficult to easy. Maintenance levels will vary from I-III. Educational and interpretive signing is commensurate with level of trail development. Costs for this alternative are determined by averaging costs for alternatives 2-5. (See alt. 2 for managerial controls on use)	\$ 81.	25,515.	312.	98,280.	\$2,912.	917,280.

1/ Costs are based upon USDA Forest Service Region Six Forest Development Trails, Development Costs and Methods, Guides for Cost Estimating, 1982



APPENDIX 5  
BENEFIT/COST ANALYSIS



## BENEFIT/COST ANALYSIS

The following assumptions and decision criteria were used in developing the benefit/cost analysis for the alternatives:

1. The level of trail development in terms of capacity for use can reasonably be expected to affect demand. In other words, an increase in the level of trail development will result in a reasonable increase in trail use. Therefore, the RVD figures provided in Tables 1 to 5 are estimates of anticipated use based upon the level of development.
2. RVD values were derived from those assigned in RPA. These values reflect the levels of operation and maintenance described in each trail management alternative. Alternatives two and three used values "less than standard" and alternatives four and five used "standard" values. Alternative six value was derived by averaging the values of less than standard and standard. The definitions for standard and less than standard are as follows:

Standard: The amount of trail use that occurs when maintenance and operation funding levels for trails are at level three or higher.

Less than Standard: The amount of trail use that occurs when maintenance and operation funding levels for trails are at level two or lower.

3. A discount rate of four percent was used to reflect the opportunity cost of monies invested in trail development.
4. The life of the project was carried out to 45 years.
5. Formula used in analysis is as follows:

$$Po = b \frac{1 - \frac{1}{(1+r)^n}}{r}$$

Where:

Po = principal invested at the present time  
b = amount of benefits received annually  
n = number of years  
r = discount rate

6. Benefit/Cost ratio was derived by dividing total benefits by total costs.



Table 1

Alternative: (2) Minimum Development - Most Difficult

Analysis Period 1985 - 2030

Benefit/Cost = 0.41/1.00

Management Activity	Analysis Period (year/decade)					
	1985-1989	1990-1999	2000-2009	2010-2019	2020-2030	
Trail Planning \$	12,000					
Trail Preconstruction \$	22,414					
Trail Construction \$		204,750				
Operation and Maintenance \$		70,875	78,750	78,750	86,625	
Program Support \$	1,811	22,050	22,050	22,050	24,255	
Total Costs per Period	36,225	305,550	100,800	100,800	110,880	
Present Net Value(Discounted at 4%)	29,800	107,000	37,800	25,500	19,000	219,100 Total Costs
<u>Scheduled Outputs</u>						
Recreation Visitor Days (RVD's) (Projected Trail Use)		7,400	11,100	14,800	18,500	
Assigned Dispersed Recreation Value per RVD (Low Standard)		\$ 5.99	\$ 5.99	\$ 5.99	\$ 5.99	
Total Benefits per Period \$		44,326	66,489	88,652	110,815	
Present Net Value (Discounted at 4%)\$	0	24,600	24,900	22,500	19,000	91,000 Total Benefits



Table 2

Alternative: (3) Minimum Development - Most Difficult

Analysis Period 1985 - 2030

Benefit/Cost = 0.11/1.00

Management Activity	Analysis Period (year/decade)				
	1985-1989	1990-1999	2000-2009	2010-2019	2020-2030
Trail Planning \$	12,000				
Trail Preconstruction \$	60,000				
Trail Construction \$		708,750			
Operation and Maintenance \$		212,625	236,250	236,250	259,875
Program Support \$	7,200	33,150	33,150	33,150	36,465
Total Costs per Period \$	79,200	1,041,150	269,400	269,400	296,340
Present Net Value \$	65,100	575,000	101,000	68,300	46,100
					855,500
					Total Costs
<u>Scheduled Outputs</u>					
Recreation Visitor Days (RVD's) (Projected Trail Use)		7,400	12,400	16,500	20,100
Assigned Dispersed Recreation Value per RVD (Low Standard)		\$ 5.99	\$ 5.99	\$ 5.99	\$ 5.99
Total Benefits per Period \$		44,326	74,276	98,835	120,399
Present Net Value (Discounted at 4%)\$	0	24,600	27,900	25,000	20,600
					98,100
					Total Benefits



Table 3

Alternative: (4) Minimum Development - Difficult

Analysis Period 1985 - 2030

Benefit/Cost = 0.17/1.00

	Analysis Period (year/decade)					
Management Activity	1985-1989	1990-1999	2000-2009	2010-2019	2020-2030	
Trail Planning \$	30,000					
Trail Preconstruction \$	120,200					
Trail Construction \$		1,102,500				
Operation and Maintenance \$		368,550	409,500	449,900	259,875	
Program Support \$	7,800	63,000	63,000	69,300	36,465	
Total Costs per Period \$	163,000	1,534,050	472,500	472,500	519,200	
Present Net Value (discounted at 4%)	134,000	852,000	177,000	120,000	88,900	1,371,900 Total Costs
<u>Scheduled Outputs</u>						
Recreation Visitor Days (RVD's) (Projected Trail Use)		8,700	14,700	21,700	28,300	
Assigned Dispersed Recreation Value per RVD (Low Standard)		\$ 11.30	\$ 11.30	\$ 11.30	\$11.30	
Total Benefits per Period \$	0	98,310	166,110	245,210	319,790	
Present Net Value (Discounted at 4%)\$	0	54,600	62,300	62,100	54,700	233.700 Total Benefits



Table 4

Alternative: (5) High Development - Easy

Analysis Period 1985 - 2030

Benefit/Cost = 0.14/1.00

Management Activity	Analysis Period (year/decade)					
	1985-1989	1990-1999	2000-2009	2010-2019	2020-2030	
Trail Planning \$	47,250					
Trail Preconstruction \$	181,125					
Trail Construction \$		1,653,750				
Operation and Maintenance \$		510,300	567,000	567,000	623,700	
Program Support \$	22,837	56,700	56,700	62,370	36,465	
Total Costs per Period \$	251,212	2,220,750	623,700	623,700	686,070	
Present Net Value (discounted at 4%)	206,000	1,230,000	234,000	158,000	117,000	1,972,000 Total Costs
<u>Scheduled Outputs</u>						
Recreation Visitor Days (RVD's) (Projected Trail Use)		10,200	16,700	27,600	32,400	
Assigned Dispersed Recreation Value per RVD (High Standard)		\$ 11.30	\$ 11.30	\$ 11.30	\$ 11.30	
Total Benefits per Period \$	0	115,260	188,710	311,880	366,120	
Present Net Value (Discounted at 4%) \$	0	64,000	70,800	79,000	62,700	276,500 Total Benefits



Table 5

Alternative: (6) Most Difficult - Easy

Analysis Period 1985 - 2030

Benefit/Cost = 0.16/1.00

	Analysis Period (year/decade)					
Management Activity	1985-1989	1990-1999	2000-2009	2010-2019	2020-2030	
Trail Planning \$	25,515					
Trail Preconstruction \$	98,280					
Trail Construction \$		917,280				
Operation and Maintenance \$		283,500	315,000	315,000	346,500	
Program Support \$	35,343	51,030	56,700	56,700	62,370	
Total Costs per Period \$	159,138	1,251,810	371,700	371,700	408,870	
Present Net Value (discounted at 4%)	131,000	695,000	139,000	94,200	70,000	1,011,300 Total Costs
<u>Scheduled Outputs</u>						
Recreation Visitor Days (RVD's) (Projected Trail Use)		8,425	13,725	20,150	24,825	
Dispersed Recreation Value per RVD (Average value between High Standard and Low Standard.		\$ 8.65	\$ 8.65	\$ 8.65	\$ 8.65	
Total Benefits per Period \$	0	72,834	118,652	174,196	214,612	
Present Net Value (Discounted at 4%) \$	0	40,400	44,500	44,100	36,700	165,700 Total Benefits